

Challenges of collective agency in transition pathways:
the case of the Walloon dairy sector

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Challenges of collective agency in the Walloon dairy sector

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Summary

This dissertation aims at clarifying the future trajectories of the Walloon dairy landscape, by focusing on the strategies of dairy cooperatives. Dairy cooperatives are approached as an economic agent developing strategies in a given context, on the one hand, and as a structure of collective decision-making and action, that interplays in terms of governance with its farmers-members, on the other hand. Beyond resource management and optimization, the focus lies on an in-depth understanding of the factors enabling or impending certain trajectories, in particular the trajectories of product diversification : dairy products others than low value-added productions such as drinking milk, milk powder, butter; productions relying on a definition of milk quality broader than that of industrial standard raw material. Drawing from a systemic approach, the dissertation focusses on the embeddedness of the dairy cooperatives and the interplay with their farmers-members in their context of development and appreciates the significance of the cooperatives' micro-scale trajectories on macro-scale transition pathways. This dissertation mobilizes a qualitative grounded theory approach based on semi-directed interviews with stakeholders and written sources. The interpretative theoretical frame combines the macro-scale Multi-Level Perspective framework with micro-scale theoretical framework from the New Institutional Economics and from Social Psychology.

The dissertation consists of four main parts. A first part investigates the trajectories of the Walloon dairy cooperatives since the development of the European Common Market, and identifies of a context-dependent pattern of interplay between the governance of the dairy cooperatives and the individual agency of dairy farmers. A second part analyses the context-dependent strategic added value of the vertical and horizontal coordination models present in the historical trajectories of the Walloon dairy cooperatives, including in terms of interplay with the farmers-members. A third part analyses the co-existence of various cooperative models today, and the significance of that co-existence for

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trajectories of product diversification at the scale of the Walloon Region. A fourth part consists in a zoom on the trajectories of farmers, considers how to approach these trajectories theoretically, and how farmers may relate to the dairy value chain, to other farmers and to collective agency in a heterogeneous farming landscape.

This dissertation uncovers that different cooperative models of horizontal and vertical coordination may co-exist, beyond the classic model of vertical integration. A combination of different models of coordination may support a transition towards a diversification of dairy productions at regional scale. There is a structural tension between the short-term interests of the dairy farmer as a milk supplier and the long-term interests of the dairy farmer as a principal investor in the cooperative. This tension can influence the strategic choices of cooperatives. Attention must hence be paid on how dairy farmers relate to collective action. Our research stresses the need to consider governance as an issue as soon as farmer gather, among farmers or in collaboration with other stakeholders, in a value chain enterprise. As key processes emerging from this micro-scale level impact macro-scale supply chain trajectories, this dissertation also calls for more attention, at policy level, for the contextual factors, support frames and value chain configuration favouring or disfavouring the connectedness of farmers to each other and to other value chain stakeholders.

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Chapter 1 - General introduction

Ce qui importe, c'est de montrer que la seule question qui vaille, pour tout être humain, est de tenter de comprendre le monde, de s'y inscrire (Edward Bond)

Il m'apprit à préférer les choses aux mots, à me méfier des formules, à observer plutôt qu'à juger. Ce Grec amer m'a enseigné la méthode (Marguerite Yourcenar, *Mémoires d'Hadrien*).

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1. Contextualisation of our research question

Anticipating the future of the Walloon dairy sector is everything but a straightforward exercise. On the one hand, many initiatives focusing on short supply chain and direct sale develop, at the level of the farm (DiversiFerm 2014; Biowallonie 2020), or through localized small-scale dairy cooperatives gathering a handful of farmers around a milk-processing project (Decamp 2013; Piron 2017). On the other hand, larger-scale dairy cooperatives are active in the processing of milk and the marketing of dairy products in long supply chains and mass retail and on the export market. Five incumbent dairy cooperatives (*Arla*, *Coferme*, *Laiterie des Ardennes*, *Milcobel*, *Socabel*) result from the consolidation (defined, drawing on Shields (2010), as the shift to fewer and larger firms) of historical players of milk collection in the region. Additionally, three new dairy cooperatives emerged over the last two decades, with specific goals related to milk quality and/or farmers' income : *Biomilk*, *Fairebel*, *Marguerite Happy Cow* (Feyereisen and Mélard 2014; Jacques et Associés 2018; Biomilk 2019). These cooperatives target the same distribution channels as the incumbent dairy cooperatives (long supply chains and mass retail) on the national market.

The Walloon region is the southern part of Belgium (Figure 1). The region hosts 2937 dairy farmers which produce a total amount of 1280 million milk litres (Celagri 2019; Collège des producteurs 2020). Pastures represent from 70% to 95% of the agricultural land in the territories of dairy production, mainly situated in the southern part of the provinces Hainaut and Namur, the southern part of the province of Luxembourg and most of the province of Liège (Fourrages Mieux ASBL 2016; SPW Agriculture, Ressources naturelles et Environnement 2020a). The region holds a diversity of dairy farm models, from intensive maize and grass silage based production to extensive pasture-based models (Lebacq 2015; Petel, Antier, and Baret 2019; Riera, Antier, and Baret 2020).

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Figure 1 : Geographical situation of Belgium and of its regions (the purple lines represent the internal regional borders). The Walloon Region is the Southern part of the country, and comprises the provinces Walloon Brabant, Hainaut, Namur, Liège and Luxembourg.

The historical dairy cooperatives collect between 91 and 97% of the milk produced in the Walloon Region (Petel, Antier, and Baret 2019; DGARNE 2007). An estimated 12% of the milk collected by these cooperatives is sold to other milk processors, of which less than 4 to 7% is processed in cheese (based on Maquet (2012) and the conversion equivalents of Meyer and Duteurtre (1998)). An estimated 18% of the milk collected is exported towards processing plants situated outside of the Walloon Region (Maquet 2012). The historical dairy cooperatives mainly process the milk collected in the Walloon Region in UHT consumption milk, butter, cream and milk powder (Table 1). The global profile of production of the Walloon Region (annex 1) is less diversified than the profile of production at Belgian level, which shows an important diversity in fresh dairy products (desserts, yogurts, aromatized milk, ice-cream, etc.) (Statbel 2017). The profile of production of the Walloon Region also contrasts with the profiles of production of some neighbouring countries like France or Germany, significantly more

oriented on a variety of cheese production and fresh milk products (IFCN 2014; Perrot et al. 2017; Milchindustrie Verband 2019; CNIEL 2020b).

Table 1 : Profile of transformation of the milk by the Walloon historical dairy cooperatives (based on Maquet (2012) and on the conversion equivalents of Meyer and Duteurtre (1998))

Use	Percentage of milk
Condensed milk	1%
UHT consumption milk	12%
Cream	19%
Butter	27%
Milk powder	41%

The Walloon dairy sector, similarly to the dairy sectors of other European countries, faces a series of challenges, in terms of environmental sustainability, animal well-being, farmers' well-being and income. The Walloon dairy farms have been previously characterized, in terms of practices and environmental sustainability of practices (Lebacqz 2015; Petel, Antier, and Baret 2019; Riera, Antier, and Baret 2020). Focus has also been given on the farmers' income, from researchers (Hemme, Uddin, and Ndambi 2014; Hemme and Dairy researchers participating in the IFCN 2015) policy-makers (SPF Economie 2009; SPF économie 2014; SPW Agriculture, Ressources naturelles et Environnement 2020b) and farmers' unions (European Milk Board 2017b; Jürgens 2017).

To increase/stabilize the income of dairy farmers, one approach relates to the optimization of farm practices and the possible reduction of costs (Guillaume and Faux 2017). Another approach consists in considering the farmer's income coming from the dairy value chain. The dairy value chain consists in organized relationships between the dairy farmers and stakeholders (including the dairy cooperatives of which they are members), through which dairy products are processed and marketed. A part of the added value generated contributes to the farmer's income (Trienekens 2011).

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The diversification of dairy productions through the development of direct processing on-farm and delivery of dairy products through short supply chains is often praised as a means to generate a higher income than the income generated through the processing of milk in the historical dairy cooperatives (Nature et Progrès 2016). Direct sale on-farm and short supply chains disconnect a part of the farmers' income from the world markets (Perrot et al. 2017) and support farm models that would be deemed uncompetitive otherwise (Touzard and Fournier 2014). However, on-farm processing and short supply chains are not without limits, for example in terms of workload and logistic issues (Maréchal, Plateau, and Holzemer 2019). They can only constitute a limited answer to the issue of the dairy farmers' income through product diversification, when put in perspective with the quantity of milk produced at the scale of the region.

Regarding mainstream value chains (processing and marketing through long value chains and mass retail distribution), studies link the generation of higher added value on the dairy markets to two strategies of product diversification (Reviron and Python 2018; Perrot et al. 2017). The first strategy is based on branding and specialized industrial outcomes (processing of milk and dairy components in products with a high market value). Milk remains a standard raw material in this strategy (Reviron and Python 2018), and the costly R&D developments at the processing and marketing stage generate the added value of the differentiated product (Perrot et al. 2017). The second strategy is based on the development of value chains relying on milk holding specific features (geographical origin, modes of production, for example organic, GMO free, grassland-based) (Perrot et al. 2017). In that case, the contribution of the milk producer (the dairy farmer) to the added value of the product marketed is higher than in the former case. This may (or not) increase the share of added value retroceded to the farmer in these value chains (Reviron and Python 2018). The above-detailed features of dairy

production of the Walloon Region (diversity of farm models, importance of grassland-based dairy farming) indicate that the second strategy may constitute a pathway of development of significance for the Walloon dairy sector. Not only can this pathway support an increase of the share of the added value given back to the dairy farmers, it may also support farming models with interesting features in terms of environmental sustainability (Riera, Antier, and Baret 2020), farmers' and animal well-being.

Recent literature stresses that “the agricultural sector (...) is characterized by a significant number of (...) actors with limited size and resources, and skewed power divisions exist between farmers and other actors in the supply [value] chain. This limits the ability to single-handedly change practices” (Vermunt et al. 2020). Shifts in practices at the level of the farm go necessarily paired with shifts in practices at the level of the value chain (Gaitán-Cremaschi et al. 2019). Indeed, no practices – and a fortiori farm practices - develop in isolation of a complex system of interactions between agents, (also between agents and non-human factors), evolving within a socially constructed frame (Pigford, Hickey, and Klerkx 2018). This is particularly true regarding the agri-food sector. Farmers evolve within their farm-unit to produce agricultural products, further processed and marketed by actors belonging to value chains (for example production cooperatives). A given practice or feature of the value chain may influence and impact other connected dimensions of the agri-food system, namely the farm (P. B. Thompson 2007). For example, the strategic choices of production cooperatives may influence the farmers' own strategic choices in terms of farming model (Vidal et al. 2020; Clay, Garnett, and Lorimer 2020). Both farmers and actors of the value chain (for example production cooperatives) further rely on a series of structures of support and development, from national food safety services to agricultural schools (Gaitán-Cremaschi et al. 2019). Both are equally under the influence of a wider landscape of particular geo-physical

features, and a broader context of “slow-changing societal values, demographic trends and macro-economic patterns” (Vermunt et al. 2020). Any consideration on a possible transition pathway, that is a “transformation of how agricultural sectors produce commodities” (Vermunt et al. 2020) has to take into consideration these interconnections between the farmers and the actors of the value chain in a wider context.

An important issue in terms of future evolution of the Walloon dairy sector hence resides in considering how the dairy cooperatives active on the mainstream distribution channels (long value chains and mass retail distribution) may evolve in the future, in relation to this challenge of product diversification, and in relation to the dairy farmer. How may these dairy cooperatives and the related dairy farmers embrace these diversification pathways based on the development of value chains relying on milk holding specific features in the future? Which impact might these pathways have on the farming model and farmers’ income and well-being? These two questions constitute the object of this doctoral dissertation. We focus, in this dissertation, on the way dairy cooperatives may embrace this strategy of product diversification in their trajectories, and how farmers, as individuals interacting with these cooperatives, may relate to these trajectories, including in terms of farming model.

2. A qualitative empirical approach

A qualitative approach is suited to understand the complexity of value chain interactions (Soosay and Hyland 2015), and grasp “the context within which they [these interactions] are constructed” (Touboulic, McCarthy, and Matthews 2020). Qualitative approaches are largely mobilized in food system approaches (Deverre and Lamine 2010a; Darnhofer, Gibbon, and Dedieu 2012) to grasp the agents’ sense-making and perception of reality, and hence understand the complex drivers enabling or disabling transition pathways (Darnhofer, Gibbon, and

Dedieu 2012). This approach is also described as an adequate approach to “provide an opportunity to analyze supply [value] chain phenomena in the context within which they are constructed and to present a richer picture of the empirical world” (Touboulic, McCarthy, and Matthews 2020).

The philosophical foundation of qualitative research is that there is sense in seeking to understand, beyond absolute truths, “phenomena in terms of the meanings people bring to them” (Denzin and Lincoln (2018) cited by Creswell and Poth (2018)). Indeed, as stated by Røling (1994), “If we believe in absolute truth, disagreement can only mean negation. If there are multiple realities, disagreement means negotiation, accommodation, learning, and the ability to reconstruct someone else’s reality (Røling (1994) referring to H.R.Maturana). This relativity in the approach of reality can consequently become an object of study: “how actors create different and multiple realities of life worlds, and how these are maintained or adapted in social interaction” (Røling 1994).

This philosophical assumption defines the “qualitative approach to inquiry”(Creswell and Poth 2018): “the collection of data in a natural setting sensitive to the people and places under study” (Creswell and Poth 2018). In our case, this necessarily implies an engagement with the dairy cooperatives and their farmers-members as co-creators of research material (Touboulic, McCarthy, and Matthews 2020), and the consideration, from a “multi-tier” systemic perspective, of how they relate to the other stakeholders of the Walloon dairy landscape (Soosay and Hyland 2015).

Our objective, by doing so, was less to use the material we would gather as a vehicle to discuss or refine some theoretical considerations, than to clarify and discuss how possible pathways towards product diversification could unfold from the present situation. The mobilization of theoretical frames, in the frame of this Ph.D. (hereunder detailed, in

point 4) will hence be interpretative: theoretical frames are mobilized because they helped interpret what the data revealed in terms of transition pathways, and what the data identified as possible mechanisms adverse to given transition pathways (i.e. diversification of the dairy productions, in our case). The scientific added value of this Ph.D. hence resides in the way the data enlightened how complex and contextualized the mechanisms underlying given transition pathways are, and in particular regarding dairy cooperatives, how these mechanisms nest into the interplay between the dairy cooperative and the way the farmer relates to the dairy cooperative.

The objective of this Ph.D. was not to consider data as a mere vehicle to reflect on the relevance of theoretical frames to understand and qualify the world. The ambition of this Ph.D. was to discuss how the combination of these theoretical frames with the particular datasets relating to the Walloon dairy sector helped grasp relevant insights on trajectories of transition. We focused, in particular on what enables or disables given trajectories (i.e. in our case a process of diversification of dairy productions, and associated changes going from the farming model towards the organization of the value chain). The insights of this Ph.D. were hence aimed as well at researchers exploring transition dynamics as at policymakers and stakeholders of the sector interested in feeding their reflection on possible enablers and disablers of trajectories.

3. A combination of epistemologies

Our focus, regarding the possible pathways towards product diversification in the Walloon dairy sector, considered from a qualitative perspective, was double: understanding what led to the present situation on the one hand; understanding what could unfold from the present situation on the other hand. Our research mobilized to this end a historical epistemology on the one hand, and a qualitative approach based on interviews with present actors of the dairy sector, on the other hand.

3.1. A historical investigation

3.1.1. Principles of the historical epistemology

History matters, when considering pathways of development from a qualitative perspective. Indeed, history as epistemology offers the benefit of considering, on the base of a combination of primary sources generated by the actors involved, the complexity and the multiplicity of the drivers that pave the way for a given evolution in a defined time and space. “History stimulates thinking on vital organizational and institutional phenomena that might otherwise go underappreciated, engendering new theoretical ideas, propositions and arguments” (Maclean, Harvey, and Clegg 2016, p.38). In this sense, this epistemological field is adequate to consider which complex drivers may have led to the present situation of dairy production in the Walloon Region, and discuss their possible significance for future trajectories of diversification.

The traditional historical epistemology differs from other social sciences approaches like economics and sociology on three aspects (Rowlinson, Hassard, and Decker 2014; Lippmann and Aldrich 2014):

- (1) It privileges narratives over generalizable theorisation;
- (2) It focusses mainly on findings and confronting sources produced at the time on a specific issue – as opposed to a systematically constructed dataset in the frame of a research question;
- (3) It considers that facts emerge from distinctive social and spatial times – and hence need to be contextualized in a particular period - as opposed to a pure chronological approach of time in dataset analysis.

This dualism identified between the historical epistemology and the practices of sociology and economics, explains why sociologists and economists tend to disqualify historical studies as building

hermeneutically naïve narrative artefacts (in the sense that they are based on the selective appreciation of the researcher), based on incomplete evidence (Rowlinson, Hassard, and Decker 2014). The results of a historical investigation are indeed not replicable in the sense that they cannot be entirely disconnected from the analytical appreciation that the researcher, in which his/her own intellectual and cultural background may be of influence. In this regards, indeed, “historians do not apply the test of replicability, but in the name of historical veracity apply instead the test of openness with respect to evidence and reasoning in the imaginary re-enactment of past experience” (Maclean, Harvey, and Clegg 2016, p.16 citing Elton 2002). The focus lies there beyond any debate related to whether “facts exist ‘prior to and independent of interpretation” (Rowlinson, Hassard, and Decker 2014, p.254 citing Novick 1988). The focus underlying the validity of a historical epistemology lies on whether the historical investigator links his/her analysis to substantial evidentiary material and may be able to discuss and recontextualize its relevance for the reconstitution of the course of events he/she studies. This includes ensuring that the material collected is as exhaustive as possible relating to the case study, and offers insights on the studied events from a variety of angles.

3.1.2. Insights on the process of data collection

In our case, the process of data collection started from scratch. We were indeed confronted with a double task at hands, since the field of historical studies around food processing structures in the Walloon region is undeveloped (Vanhaute and Van Molle 2006; Matthys and Lefebvre 2006). On one hand, the exact timeline of the evolution of the dairy cooperatives was unclear (if we except the partial information present in some publications (Saldari 1978; De Baere 1973)). On the other hand, the drivers that lead to the present present landscape of milk processing in the region had not been investigated before.

In terms of timeframe, we considered the period ranging from the end of the Second World War until today. This period saw significant evolutions in terms of technologies of milk processing (De Baere 1973), a trend of concentration in the distribution sector (CRISP 1978) and the development of the European institutional frame of the Common Agricultural Policy (Ledent and Burny 2002) of significance for the development of dairy cooperatives until the present time (Ajates 2020).

An analysis of the course of events in the main agricultural newspaper (Les éditions rurales 1964) and the publications mentioned in the previous paragraph allowed identifying a series of archival funds relating to the evolution of the Walloon dairy cooperatives (detailed in annex 2) : governmental sources at national and regional level and archives of former dairy directors. The latter contained not only material related to the dairy cooperatives to which the directors related, but also numerous reports of exchanges between dairy directors and with the agricultural unions and the national and regional public authorities, from the sixties to the nineties. The insights from these sources was complemented with a series of published sources et reports of analysis (Union de l'industrie laitière belge 1962; 1962; 1962; Office National du Lait 1977; Verkinderen and Ackerman 1964; Ackerman 1966; Debergh 1992; Ackerman 1971; Van Hecke 1976; Institut National de Statistique 1976; Algemeen Verbond der Coöperatieve Zuivelfabrieken 1974), and with the accounts of oral sources.

The oral sources were identified from the information present in the agricultural press and through contacts with present actors of the sector are various agricultural fairs in Belgium. We met all members of the sector that we identified as related to the evolution of the Walloon dairy cooperatives and who were still alive (15 in total). We did not follow a unified interview framework with these historical actors, in the sense that we started systematically from their own timeline of action within the sector. From this timeline, we elaborated on the course of events they had

taken part to, and to which they could relate their recollections. Our prior knowledge of the course of events helped us in this process. It allowed situating their recollections and interacting with them as to the course of event. Our prior knowledge sometimes brought contrast to what they initially told, generating dialogue and trust in the fact that we were well informed on the topic, which in turn induced more recollections and relevant contrasts as to the information that had already been collected. In this sense, the global orientation of the interviews differed according to the profile of the interviewee, that person potentially being either a member of an agricultural union, a director of dairy cooperative, a member of the ministry of agriculture or a member of the board of directors of a dairy cooperative (see annex 2).

The diversity of sources (public and private archives, oral sources from various stakeholders in the dairy sector, published sources) and of document types (official reports, minutes of meetings, correspondence between actors, retrospective oral accounts) allowed to consider the past evolution of the Walloon dairy cooperatives from a variety of angles. This enriched the historical narrative by bringing contrasts into the approach of issues. The historical narrative was first established on the base of these primary sources without reference to any theoretical frame (De Herde 2020).

3.1.3. Data analysis further enriched the epistemological approach

From this primary historical narrative (synthesised in Chapter 2 - Historical trajectories of the Walloon dairy cooperatives, part 1), we started a reflection as to the significance of these historical findings. These findings indeed revealed a complex combination of drivers that acted adversely on the trajectories of product diversification of the Walloon dairy cooperatives (which, at the time, were mainly considered according to the first strategy of product diversification detailed by Reviron and Python (2018) and Perrot et al. (2017), that is through R&D

developments and investments at the processing and marketing stage). These findings also revealed how the interplay between the cooperative governance and the farmers-members of the cooperatives hampered long-term strategies towards product diversification.

Historical studies in other times and places had uncovered similar dynamics (O'Rourke 2007; Henriksen, Hviid, and Sharp 2012; Lampe and Sharp 2014; McLaughlin and Sharp 2015; Henriksen, McLaughlin, and Sharp 2015). We thus decided as a second step in our historical investigation to analyze the significance of our results in terms of pathways of development of dairy cooperatives. We followed there the recent but expanding historiography of food systems relying on interdisciplinary approaches to consider the interplay between individuals, organisations and the impact of the broader cultural and political framework in evolving food systems (Scholliers 2007; Brassley 2009; Segers, Bieleman, and Buyst 2009). This interdisciplinary approach is described as analytically structured history (Clark and Rowlinson 2004; Rowlinson, Hassard, and Decker 2014; Lippmann and Aldrich 2014; Leblebici 2014; Maclean, Harvey, and Clegg 2016). It combines two epistemological approaches. On the one hand, the micro-scale historical narrative grounded in primary sources brings any prior assumption through the "test for authenticity" brought by the analysis of evidence emerging from source analysis (Maclean, Harvey, and Clegg 2016, p.16 citing Elton 2002). On the other hand, the confrontation of the historical investigation to theoretical frames from disciplines (mainly from sociology, political science or economics) provide new lenses to build the historical narrative, connect it to present and prospective issues, and favour the connexion between the micro-history and discussion on conceptual meta-narratives (Maclean, Harvey, and Clegg 2016). Such an approach provided meaningful insights on how the long-term interaction between farmers and farmers' cooperative influenced the latter's

strategies. The developments related to this second phase are exposed in chapter 2, part 2 of this Ph.D.

3.2. A qualitative approach based on the accounts of the present actors of the Walloon dairy sector

Besides the historical investigation, we mobilized in this dissertation the perspectives of the current actors of the Walloon dairy sector. The objective here was to draw from their insights, in accordance with the general principles of qualitative inquiry hereabove exposed in point 2, which possible pathways of development in terms of product diversification may unfold, and what constituted possible obstacles to this development.

To this end, we conducted a series of semi-directed interviews with actors of the dairy sector. Three distinct experimental dispositives were implemented. In the first dispositive, we interviewed representatives of organizations active in the dairy value chain, acting upwards or downwards of dairy farmers in this value chain. In the second dispositive, we mobilized the results of our own master thesis based on interviews with farmers and cheese processors. This second dispositive was complemented with a third dispositive consisting of another round of interview of dairy farmers. This third dispositive was implemented with the help of two master students in the frame of their master thesis.

Regarding the first experimental dispositive, the actors relating to the organizations active in the dairy value chain were identified through three agricultural fairs held in Belgium in 2017, and further contacted for an interview. The 24 interviewees (see chapter 4 for more details) were approached, in a first instance, with a generic questionnaire (see annex 3) aiming at situating their organization in the broader Walloon dairy context and identify, from their present situation, which pathways of development were considered. This generic approach of the interviewees

revealed two distinct approaches of the dairy market by the actors of the Walloon dairy value chain, to which they linked a specific definition of milk as raw material for the processing of dairy products. The considerations of their interactions with one another also uncovered how the coexistence of distinct cooperative forms may support pathways of diversification of the dairy productions in the region. Chapter 4 discusses these findings.

The approach of dairy farmers in the second and third experimental dispositive aimed at exploring the links between the farmers and the dairy value chain. In particular, this part of the research considered how the embeddedness of the farmer within the frames of the dairy value chain influenced the farmers' consideration of their function as dairy farmer and their farm practices. The first experiment (in the frame of my own master thesis) targeted 15 farmers exploring alternatives to the delivery of milk to dairy cooperatives and 3 cheese processors collecting milk directly from farmers. In this first experiment, the interviewees were asked to elaborate on their own trajectories and the constraints faced throughout these trajectories (see annex 4). This experiment revealed the embeddedness of these trajectories in the broader dairy value chain and the impact of the latter on how the farmers defined themselves as dairy farmers. The second experiment (conducted by two master students in the frame of their master thesis) targeted 24 dairy farmers selected as to cover the diversity of farming models and milk processing pathways present in the region. In the second experiment, the interviewees were questioned in relation to how they defined their role as dairy farmers, how this definition related to their farming practices, and how both identities and farming practices could be influenced by other stakeholders of the dairy value chain (see annex 5). The results of these experiments are discussed in chapter 5.

Similarly to the process followed in the historical part of the Ph.D., an important part of the analytical work consisted in drawing accurate

descriptions of the data collected. “Through studying data, comparing them, and writing memos, we define ideas that best fit and interpret the data as tentative analytic categories” (Charmaz 2014). This entails that the researcher, at every point of his/her process, questions the validity of his/her interpretations, whether the data exhaustively and accurately support these interpretations. We experienced this robustness as a process of iterative description through coding. We described the data and tested various classifications of the data through coding, until the categories defined covered exhaustively the collected material, did not leave significant material out of the picture, and allowed to define a data-based interpretation of the key issues (i.e. meaningful for future trajectories that emerged from the actors’ depiction of their reality). Similarly to the historical investigation, these findings were further discussed in the light of theoretical frames see hereunder, point 4, as to draw significant insights on the future trajectories of development of the Walloon dairy sector, and cooperative development in the dairy and wider agrifood sector more generally.

3.3. Assets and limits of the selected epistemologies

“Qualitative research is a situated activity that locates the observer in the world” (Denzin and Lincoln (2018) cited by Creswell and Poth (2018)). Rather than seeking objective evaluation – artificially detached from its object of study – as an unattainable horizon, such a process accounts for the fact that the reflexivity of the researcher plays, alongside the “voices of the participants”, a crucial role in the outcome of the research process (Creswell and Poth 2018). This outcome, which takes the form of “a complex description and interpretation of the problem and its contribution to the literature or a call for change” (Creswell and Poth 2018), is necessarily influenced by the researcher’s pre-existing philosophical assumptions. How researchers interpret the data they collect (and sometimes which data they collect – although this aspect ties

more to the ethics and rigor of a scientific investigation process, discussed further on), depends of the philosophical assumptions in which the researchers root their approach (Creswell and Poth 2018), consciously, semi-consciously, and sometimes unconsciously. As stressed by Thompson (2007), “the way we conceptualize a system is deeply value laden, and reflects judgements about what is thought to be problematic, as well as likely guesses about where solutions might lie” (P. B. Thompson 2007).

In our case, these pre-existing values might well be:

- a consideration that industrial standardization, and the related landscape and practices homogenization it entails in terms of farming model, may not be the only possible model to build a sustainable dairy future;
- a consideration for structural power issues- in the sense of what allows/impedes agents to effectively exert their power to act (Avelino and Rotmans 2011; Avelino and Wittmayer 2016).

Researchers conducting qualitative research “are embracing the idea of multiple realities” (Creswell and Poth 2018). It does not mean, however, that their research process should make their own pre-suppositions or desired outcome – or anyone else’s pre-suppositions or desired outcomes - supersede a rigorous analysis of facts. Post-modernism accurately stresses that science, as an intellectual exercise, is a social construct (Byrne 1998), and should pragmatically be approached as an outcome made in a given context (Creswell and Poth 2018). However, this should not intrinsically undermine the validity of “an engaged science not founded in pride, in the assertion of an absolute knowledge as the basis for social programmes, but rather in a humility about the complexity of the world coupled with a hopeful belief in the potential of human

beings for doing something about it” (Byrne 1998). Adopting a rigorous methodology of inquiry is one of the keys validating this process.

Within the Ph.D., we endorsed a constructivist grounded theory approach. Grounded theory methods “consist of systematic, yet flexible guidelines for collecting and analysing qualitative data to construct theories from the data themselves” (Charmaz 2014). The underlying philosophical assumption behind grounded theory, is pragmatism (Charmaz 2014) : humans are “active agents in their lives (...) rather than passive recipients of social forces” (Charmaz 2014), and meanings and social structures emerge from interactions (Charmaz 2014). What is true in all generality, is also true for researchers, who may grasp from their inquiry which issues matter and what works as solution to issues, beyond any pre-existing value-laden assumptions or interpretative frameworks (Creswell and Poth 2018).

In a constructivist grounded theory approach, the researcher plays a part in constructing the theory, that is hence an “interpretative portrayal of the studied world”, more than an “exact picture of it” (Charmaz 2014). Truth does not lie in an absolute to be reached, an external world laid bare through replicable experiments (Röling 1994; Charmaz 2014). The robustness of the grounded theorists lies in the seal of veracity of exhaustively collected and recontextualized data (Lippmann and Aldrich 2014) and the ability to draw from there an analysis grounded in comparison and in the will to draw generalizable – data supported - insights (Maclean, Harvey, and Clegg 2016). In this sense, the process strongly relies on the ethics of the researcher, who should not exclude any source of data that might contrast with their value-laden pre-assumptions, or revoke parts of the data that may not fit into or contradict a theoretical frame in the making. In this regard, the principle of “saturation” (Kaufmann 2011) is a useful methodological tool : the fact that the data collected provide a comprehensive and contrasted view of

issues, and that no major additional contradiction or contrast is expected from supplementary material.

In Grounded theory, data can be any material of inquiry. The dialectic process between the data collection, the data analysis, the development of analytical ideas about the data is permanent (Charmaz 2014). The process is inductive (data-based), comparative (based on the confrontation of the data and of the theoretical categories that might emerge from the data), and iterative (as a constant process of re-confronting any theoretical assumption and deduction to the data) (Charmaz 2014). This methodology requires from the researcher a continuous “cyclical process of preparation, participation, and reflection to guarantee the quality of the research” (Touboulis, McCarthy, and Matthews 2020).

This line was followed throughout the investigation process of this Ph.D, in particular that cyclical process of drawing analysis from the data and going back to the data as to whether they support the analysis. Despite this rigorously followed research process, we still identify two methodological limitations in our research. The first limitation is intrinsic to the historical epistemology, which has to work with the most exhaustive set of material available (archives and oral sources), yet is dependent upon the archival material having been held and available (see annex 2), and the historical actors (oral sources) being still alive and available for an interview. As such, our investigation was an exploratory enterprise on the past evolution of the Walloon dairy cooperatives, for which we were as exhaustive as possible in the gathering of evidentiary material, given these constraints. What led us to consider the amount of material gathered sufficient to validate this investigation, is the fact that it contained material (like reports and correspondence) produced by actors from which we did not have access to the archives or to oral accounts, hence offering contrasting views on the evolutions studied. The second limitation concerns our process of data collection of the

representatives of the present organisations of the Walloon dairy sector (see chapter 4). The boundaries of our research were *a priori* not defined within the Walloon dairy sector. It is through the process of data collection that we identified the dairy cooperatives within their value chain environment as significant knot for the future of the dairy sector. This explains why the set of interviewees for this part was in first instance considered from a broad perspective, and targeted more than just actors from dairy cooperatives. The data collected in this process presented however sufficient richness and contrasts to discuss meaningfully specific issues related to the pathways of diversification of the Walloon dairy sector according to the principle of saturation (Kaufmann 2011).

4. An interpretative theoretical frame to enlighten the data

The mobilization of theoretical frames in this Ph.D. is interpretative. The theoretical frames were mobilized because they helped interpret the findings of the empirical research process as to what they reveal for future pathways of development of the Walloon dairy sector, and more broadly for cooperative development in processes of transition in the wider agrifood sector.

Our research question (namely which future pathways of development could unfold in the Walloon dairy sector, in particular towards product diversification) led us to nest our global approach within the broader set of literature on the transition of agrifood regimes, in which the Multi-Level Perspective is mobilized as a prominent theoretical frame (Markard, Raven, and Truffer 2012; El Bilali 2019). Point 4.1 describes the Multi-Level perspective as encompassing interpretative framework. Point 4.2 considers how to approach processes of change (like the one towards product diversification for the Walloon dairy sector)

within this framework. Point 4.3 details the approach we considered in this dissertation, in light of the elements presented in point 4.2.

4.1. The Multi-Level Perspective as encompassing frame

The Multi-Level Perspective accounts for the fact that every individual evolves in a systemic construct, defined as “socio-technical system”. A socio-technical system is “created, maintained and refined” by the social groups evolving in it, and comprises “technology, science, regulation, user practices, markets, cultural meaning, infrastructure, production and supply networks” (Geels and Kemp 2007). These system components are “the tangible elements needed to fulfill societal functions” (Geels and Kemp 2007) and go paired with a socio-technical regime, the “rules that guide and orient activities” (Geels and Kemp 2007) of the social groups evolving in the socio-technical system. Socio-technical system and socio-technical regime are, most of the time, considered in the literature as a coherent interrelated set, and generically considered jointly under the umbrella term of “socio-technical regime” (El Bilali 2019).

The framework of the Multi-Level Perspective considers as well the stability of incumbent socio-technical regimes, as the occurrence of transition of socio-technical regimes. Transitions are deep changes in socio-technical regimes’ patterns, leading to the development of a new socio-technical regimes (Hans de Haan and Rotmans 2011). Socio-technical regimes are stabilized in the sense that agents [the humans acting within the regime] evolve within a coherent environment in which their trajectories are oriented by shared rules, habits, and knowledge transmission patterns (here defined as ‘routines’). The socio-technical regime “locks-in” the agents’ trajectories in given pathways, which in turn contributes further to its stability. It is a dialectic process where agents and regime constitute and condition each other, through enacted

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routines, in a stabilized pattern (Maréchal 2012; Sutherland et al. 2012; Pesch 2015). In this stabilized regime, innovation may emerge in niches, separate protective spaces, where other routines may develop and ultimately lead to a change of socio-technical regime (as illustrated in figure 2) (Hans de Haan and Rotmans 2011; Pesch 2015).

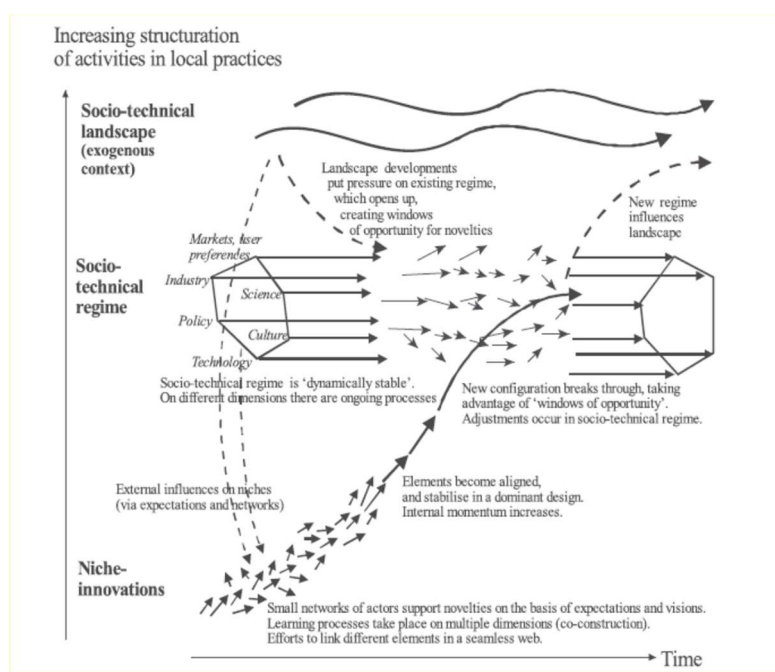


Figure 2 : Representation of the Multi-level Perspective on transition pathways (Geels (2020) on the base of Geels and Schot (2007))

Agri-food socio-technical regimes present the following particularities: they host an important diversity of actors, from farmers to value chain actors and consumers ; they develop in strong connection with a geo-physical context (Darnhofer, Sutherland, and Pinto-Correia 2015). Changes of practices may occur at the level of the farm or at the level of the value chain without necessarily developing in a separate sphere exempt of connexions with the actors and the rules of the incumbent socio-technical regime (Gaitán-Cremaschi et al. 2019; Vermunt et al. 2020). Recent approaches on agricultural transitions consider the interlinking between agents in evolution pathways,

regardless of the fact that they might belong to the incumbent socio-technical regimes or alternative niches (Pigford, Hickey, and Klerkx 2018; El Bilali 2019; Turner et al. 2020).

The definition of what constitutes the incumbent agri-food socio-technical regime and what constitutes a niche, thus forces researchers to navigate through “blurry and permeable” boundaries (Gaitán-Cremaschi et al. 2019). The definition of niche and regime often depends on the researchers’ justification of where they decide to place these boundaries (El Bilali 2019). Niche and regime are, however, useful and broadly mobilized analytical concepts (as it is the case in this Ph.D. dissertation), for example to characterize the coherence of a considered ‘dominant’ regime and of a considered ‘alternative’ niche. Beyond characterization, however, this conceptual configuration tells little about how transitions actually occur, through which complex day-to-day interaction processes fundamental shifts in the incumbent socio-technical regime’s routines may take place (Ingram et al. 2015; Bui et al. 2016). Any transition, and *a fortiori* in the agri-food sector, is complex. Indeed, agriculture and food production are per definition land-based activities, connecting human societies to nature and involving a great diversity of actors in a social construct (Darnhofer, Gibbon, and Dedieu 2012; Touboulic, McCarthy, and Matthews 2020). Drivers of stability and evolutions are not only social, physical, biological or technical “but more likely the result of a complex set of diverse natural and social mechanisms, and of the interaction between all these elements” (Darnhofer, Gibbon, and Dedieu 2012). When considering pathways of change, in particular, this complexity requires a multilayered approach in terms of analysis and action (Röling and Wagemakers 2000; Grin, Rotmans, and Schot 2010).

4.2. From an encompassing frame to the consideration of processes of change

As stated by one of the authors of the Multi-Level Perspective (MLP), the MLP framework was developed as “a ‘global’ model to provide a big picture understanding of longitudinal socio-technical transition processes” (Geels 2020). The MLP as such does not account for the “local (micro, short-run)” action processes, “the micro ideas, decisions, actions or events of particular developmental episodes” (Geels (2020) citing Poele and Van de Ven (1989)). Geels (2020) recently filled this gap by considering how to derive from the underlying theories of the MLP the foundations of a “multi-dimensional model of agency” (Geels 2020). Agency can be defined as the way “individual and collective actors” act “in purposive actions in an attempt to prevent or generate change (Fischer and Newig (2016) on the basis of Bos et al. (2013)). These actions happen indeed on a day-to-day basis and at another time- and space-scale than that of a globalized perspective on a long-term pattern of change.

In the micro-macro distinction considered within the MLP, we identify a double perspective, which deserves to be further elaborated in this introduction. On the one hand, there is a static consideration related to a particular socio-technical construct, comprising a macrolevel embedding a meso and a microlevel (Geels and Kemp 2007). On the other hand, we identify a longitudinal consideration related to transition processes along a given timescale, considering macro-scale changes on one hand, and the fact that changes occur in first instance at a microscale timescale on the other hand (Geels 2020).

The first micro-macro consideration distinguishes a macrolevel, the landscape and a meso-level, the socio-technical regime structuring action at the micro-level of acting agents. The landscape is “the set of exogenous environment that is beyond the direct influence of actors. The content of the socio-technical landscape is heterogeneous and may include aspects

such as economic growth, broad political coalitions, cultural and normative values, environmental problems and resource scarcities. The landscape metaphor is used to emphasise the large-scale material context of society, e.g. the material and spatial arrangements of cities, pervasive technologies that affect all of society. The material landscape is changing very slowly. The political landscape is more dynamic: we may witness revolutions, new coalitions and new ideas, creating room for novelty and system change” (Geels and Kemp 2007). The socio-technical regime, the “roles, routines, ways of thinking” and “the favourable institutional arrangements and regulations constituting the “accompanying infrastructures” of these roles, routines and ways of thinking constitute the meso-level. The micro-level relates to the agency of individuals or collectives. These agents act within and in interaction with the socio-technical regime (the meso-level), or at its margins in niches, both being embedded in a broader macro-level landscape (Geels and Kemp 2007).

The longitudinal consideration of macro- and microdimensions in the MLP relate to the consideration of different timescales in transition processes. On the one hand, the macro-scale global model refers to “the overall trajectories, paths, phases or stages in the development of an innovation” (Geels 2020 citing Poole and Van de Ven 1989), whereas the micro-scale local model focusses on “the micro-ideas, decisions, actions or events of particular developmental episodes” (Geels 2020 citing Poole and Van de Ven 1989). The MLP was developed and used to characterize retrospectively macro-scale transition pathways. Its use as theoretical frame to consider also prospective pathways of transition makes it necessary to encompass as well that that micro-scale where acting agents determine unfolding pathways of change (Geels 2020).

Dynamics of change at that micro-scale are naturally “messy” (Elzen, van Mierlo, and Leeuwis 2012). They involve actors in “a complex array of interactive processes operating at multiple levels of the niche-regime space” (Ingram et al. 2015). These interactive processes can be approached

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through a variety of angles, corresponding each to specific fields of inquiry:

- how networks develop and evolve, object of network studies (Ingram et al. 2015; Bui et al. 2016; Diaz et al. 2013; Darrot et al. 2015; Grin, Rotmans, and Schot 2011; Elzen, van Mierlo, and Leeuwis 2012) ;
- how action is structured through a series of institutions (“the formal and informal rules and arrangements that orient human behaviour and (inter)action” (Elzen, van Mierlo, and Leeuwis 2012), and the structures materializing and enacting these rules (Smink et al. 2015));
- how these institutions reflect underlying values and power struggles, object of the convention economics (Dumont, Gasselin, and Baret 2020) and more recently of multi-actor approaches of power (Avelino and Rotmans 2011; Avelino and Wittmayer 2016);
- how the institutions are reflected in language and discourse, object of the discursive approaches (Upham et al. 2015; Rosenbloom, Berton, and Meadowcroft 2016; Buschmann and Oels 2019; Rauschmayer, Bauler, and Schöpke 2015);
- how changes of practices dialectically interplays with these network, language and institutional dimensions, object of the social practice theory (Hargreaves, Longhurst, and Seyfang 2013).

The above-mentioned authors mobilized and discussed these agency-related theoretical frames within the wider macro-scale level of the Multi-Level Perspective. It is a way to account for the fact that agents dialectically co-evolve with shifting meanings and institutions in transition pathways, and for the fact that lock-ins hindering agency, and hence ultimately macro-scale pathways of change, may express

themselves at the level of these micro-scale dimensions (Buschmann and Oels 2019; Malone and Gomez 2019; Plumecocq et al. 2018).

4.3. Transitions considered from a micro-scale and micro-level perspective

This Ph.D. places itself specifically in this same line of considering how macro-scale changes of pathways may be rooted this micro-scale dimension of agents interacting at the micro-level and within the meso-level of the socio-technical regime, and under the influence of a wider macro-level landscape. Regarding one of our objects of study, the dairy cooperatives, there is a structural complexity to consider. Dairy cooperatives are an agent acting in the value chain, interacting with other stakeholders (processors further downwards in the value chain, brandholders, mass retail) and facing requirements of economic profitability (Hansmann 1996; Schneiberg, King, and Smith 2008; Forney and Häberli 2017; Chlebicka, Falkowski, and Lopaciuk-Gonczaryk 2017). Dairy cooperatives are also a structure, a legally framed institution, gathering individual agents, the farmers, around a series of shared goals. From a Multi-Level Perspective, dairy cooperatives are an institution of collective agency (micro-level) that is determined by the meso-level, the socio-technical regime (for example by the legal rules put in place to frame these organisations). From the perspective of organization theory (Ménard 2017), dairy cooperatives are a structure where “transactions are actually drafted, negotiated and implemented”, with their farmers-members on one hand, and with other stakeholders of the value chain on the other hand. They hence belong to the level of “micro-institutions”, differing from “meso-institutions” like regulatory agencies, institutions of arbitrage or public bureaus certifying quality. The latter “do not produce and deliver actual goods and services that are inputs to other organisations”, and their purpose is to “delineate the specific playing field within which transactions are organised” (Ménard 2017). In the frame of

this Ph.D, we hence consider dairy cooperatives as micro-level institutions, as a place of collective agency defining micro-scale decisions and actions leading ultimately to the definition of macro-scale pathways of development.

The interpretative frames that we combine with the Multi-Level perspective in this Ph.D. aim to consider how micro-institutions like cooperatives may have an impact on macro-scale pathways of development, and how the cooperatives' actions and pathways of development interplay with the farmers' own trajectories. As stressed by Grandori (2017), how farmers relate to the cooperative, interact as milk supplier and make decisions as cooperative member ties in more with the features of a democracy than those of a hierarchy. Additionally to the challenges of the cooperative as agent in the value chain, this means that the dynamics and challenges of collective agency (the organisation of collective action to attain a certain goal) also have to be taken into account: that is, how farmers as individuals may relate to the dairy cooperative as structure of collective agency. An adequate interpretative framework to consider this complexity is a framework developed by Williamson in the field of *New Institutional Economics* (Williamson 2000).

New Institutional Economics focused initially on understanding how business organizations developed. It was assumed, from a rationale of economic efficiency (Clark and Rowlinson 2004; Hirsch and Lounsbury 1996), that organizations developed in a way to minimize transaction costs (the costs associated with market transactions). The field – and in particular the framework mobilized in the frame of this Ph.D. dissertation - later integrated that organizations do not develop in a legal and cultural void, and hence may be oriented in their structure and strategies by the institutional frameworks of the socio-technical regime in which they evolve and by norms, customs and traditions belonging to a wider socio-cultural landscape (Williamson 2000; 1998; Clark and Rowlinson 2004). Williamson's framework also accounts for the fact that an organization's

strategic choices may be determined by and further have feedback effects on its organizational structure and governance model, which allows to consider the possible interplay between the individual agency of farmers and the governance of the dairy cooperative. This frame thus seems adequate to approach the dynamics and challenges of collective agency linked to the very structure of dairy cooperatives, and to link these simultaneously to their embeddedness in a macro-scale context of change. Williamson's framework strictly speaking considers a gradation in timescale at which change may operate at these various levels, strategic choices in terms of resource allocation occurring on a continuous basis, governance changes happening at a scale of one to ten years, changes in institutional frames at a scale of ten to a hundred years and changes in the wider socio-cultural landscape at a scale of a hundred to a thousand years (Williamson 2000). As our approach focused on micro-level and -scale actions likely to define macro-scale pathways of change, we mobilized Williamson's framework to reflect on how these micro-level and -scale actions were likely to imprint institutional and socio-cultural changes, if only at a very limited space-scale, constituting what, in the Multi-Level Perspective, is conceptualized as a niche (Geels 2004; Pesch 2015).

When considering micro-level agency at the level of the farmer and its connexion to a wider context, an adequate framework has been identified in agri-food sustainability studies oriented on the individual trajectories of change, and their connection to how the farmers define their roles as dairy farmers (Burton 2004b; Sutherland et al. 2012). By combining these approaches with the Multi-Level Perspective, we fed our reflection as to the connection between the micro-level and micro-scale patterns of change macro-scale transition pathways, and enlightened the data collected at the level of the farmers in this regard.

5. Positioning of the Ph.D. in relation to the existing literature

This Ph.D. is an interdisciplinary Ph.D., with an empirical approach nested into a broader perspective of transition. Hence, the objective of this Ph.D. was not to contribute to the scientific advancement of theoretical considerations in specific fields or scientific schools, if we except the wider interdisciplinary field on agrifood transition studies considered from a Multi-Level Perspective (El Bilali 2019). This part describes, through this angle, how this dissertation relates to the existing literature on agrifood cooperatives (point 5.1), and which interpretation of lock-ins we endorsed in our research outcomes (point 5.2).

5.1. Dairy cooperatives' trajectories driven by complex multi-level processes

One of our main object of study, the dairy cooperatives, can be considered from different angles. The studies on agrifood cooperatives range from the economic performance analysis of cooperatives in resource-use efficiency, output quality, transaction costs management, members' income (Jolink and Niesten 2012; Kataike et al. 2019; Grashuis and Su 2019), to the analysis of their governance structure and related innovation capacity (Jolink and Niesten 2012; Hobbs 2017; Grashuis and Su 2019).

When talking about cooperative performance, it is important to stress that cooperatives encompass more than just an economic role and may support and enact collective dynamics (Ajates 2020). Several studies consider, for example, how the cooperative may act as a vehicle to design a sustainable territorial development (Swagemakers et al. 2019; Contini, Marotta, and Torquati 2020; Ajates 2020; Scaramuzzi, Belletti, and Biagioni 2020), or support farmers in the adoption of environmental-

friendly practices (Herrera-Reyes, Carmenado, and Martínez-Almela 2018; Swagemakers et al. 2019; Vytautas Magnus University et al. 2019; Runhaar et al. 2020). In some cases, this transition towards more sustainable practices ties with the exploration of higher added value agri-food marketing pathways (Swagemakers et al. 2019; Runhaar et al. 2020; Pachoud et al. 2020). Agri-food cooperatives, as structure of collective agency, may nevertheless be hindered in their trajectories of transition towards sustainable farming practices and/or higher added value productions, by lock-ins emerging from the interplay between their governance structure and the individual agency of farmers (Borgen 2011; López-Bayón et al. 2018; Sánchez Navarro, Arcas Lario, and Hernández Espallardo 2019). As a consequence of their status or residual claimants and of the statutory rules of equal remuneration, farmers may tend to favour their short-term remuneration goals over the long-term development of the dairy cooperative (Chaddad and Cook 2004; Cook and Iliopoulos 2000). Additionally, the statutory rules of equal remuneration gives farmers no incentives to produce a raw material of differentiated quality, i.e. linked to specific farming practices, to which the added value of the cooperative's end product may be linked, underlying a product diversification strategy (Borgen 2011). Institutional support by the cooperative (for example to help farmers labelize their farming practices or join specific development schemes) and organization of knowledge transfer among members and with the cooperative, tend to help overcome these lock-ins (Sánchez Navarro, Arcas Lario, and Hernández Espallardo 2019; Vermunt et al. 2020).

The cooperative structure also evolved over the last decades to address these issues related to the farmers' commitment towards long-term cooperative goals (Chaddad and Cook 2004; Borgen 2011; Grashuis and Cook 2017). These evolutions include adaptations to the statutory rules and new types relationship with the farmers: a closed membership and the progressive acquisition of the status of residual claimant, the

creation of investors' shares, the possibility to conclude specific delivery and remuneration contracts (Chaddad and Cook 2004; Borgen 2011; Grashuis and Cook 2017). These evolutions also include the de-integration of the cooperative, separating the activities of milk collection by the cooperative from the processing and marketing stages and managing the latter in cooperation with joint private investors (Koulytchizky and Mauget 2003; Chaddad and Cook 2004). The latter has, for example, been observed in the constitution of large-scale supranational dairy cooperative groups (Koulytchizky and Mauget 2003; Mauget 2008; Filippi, Frey, and Mauget 2008), as in smaller-scale cooperative ventures (Grashuis 2018; Grashuis and Cook 2018; Contini, Marotta, and Torquati 2020). These evolutions of the cooperative structure led to an increasing diversity of cooperative models and hybrid modes of coordination between the different stages of the agri-food processing value chain, and between farmers and other stakeholders (Grashuis and Cook 2017; Hobbs 2017). These evolutions do not guarantee, however, that agrifood cooperatives would support diversification strategies based on differentiated farming practices. For instance, some larger-scale cooperatives focus their prospective trajectories on environmental sustainability and the reduction of GES emissions (Danone 2016; Institute for European Environmental Policy 2019). Initial cooperative goals of social utility (Marcis et al. 2019) and the consideration of other sustainability dimensions supported by differentiated farming and processing practices at the local or regional level (Clay, Garnett, and Lorimer 2020) may lose their significance in favour of larger scale efficiency and profitability logics (Koulytchizky and Mauget 2003).

Regarding the case of the Walloon dairy sector, it hence appears of significance to consider a possible transition towards production diversification – in particular one that connects to a diversity of farming models and practices and may support an increase of the share of the

added value given back to the farmers – at the crossover of different dimensions: cooperative model, cooperative strategy, and interactions with the farmers-members. This Ph.D. aims at pursuing an analysis of the Walloon dairy cooperatives through an approach that considers the transition processes – including thus, in our case, a possible transition of the Walloon dairy cooperatives towards product diversification - as a complex multi-level processes grounded in interactions between agents at the micro-level (Geels 2020). When considering these interactions, the role of the cooperative in supporting the farmers' commitment for a given development pathway is not often specifically considered beyond considerations on contracts and claimant's rights (Borgen 2011; Grashuis and Cook 2017). One central question, for example, is whether the farmers, beyond binding contracts, experience the commitment to the cooperative as more than as isolated welfare-maximizers and embrace their participation to the cooperative as a collective action (Chlebicka, Falkowski, and Lopaciuk-Goncaryk 2017; Ajates 2020). Considering a cooperative's strategic added value in a given context, and the effect of a cooperative model and its enacted strategy on the commitment of the farmers, is hence of relevance in the consideration of their possible role in prospective pathways of development. Processes of changes/a given economic construct and its performances are indeed grounded not only in what Geels (2020) calls "the world of action", that is "routines, capabilities, resources", but also "the world of cognition", that is the "beliefs and strategies" shaping any project, what Jolink and Niesten (2012) call the "experiential learning" and the "strategic flexibility" – and their connexion to a wider institutional landscape (Jolink and Niesten 2012; Geels 2020).

5.2. Lock-ins to diversification pathways from a perspective of complexity

Our research outcomes are mainly discussed in terms of lock-ins, that is the processes that may act against a given trajectory – in our case, trajectories of product diversification enacted by dairy cooperatives acting as agents on the market (Maréchal 2012; Sutherland et al. 2012; Pesch 2015).

In the fields of economics, lock-ins are mainly explored in terms of self-reinforcing mechanisms that may support the dominance of a certain technology or practice over time, despite a possible long-term path-inefficiency (Kuokkanen et al. 2017; Magrini, Béfort, and Nieddu 2018). These mechanisms derive from the fact that the returns of adoption of a certain technology or practice may be increasing when the technology or practice is widely adopted by agents (leading for example to decreasing information costs, increasing network externalities) (Kuokkanen et al. 2017; Magrini, Béfort, and Nieddu 2018). These mechanisms contribute to the further adoption of that technology or practice, a pattern qualified under the concept of path dependency. In the interdisciplinary field of transition studies, lock-ins and path dependency are explored from a systemic perspective, as resulting from a series of interactions among agents and between agents and the meso-level frames of the socio-technical regime ((Vanloqueren and Baret 2009; Lamine et al. 2012; Aarset and Jakobsen 2015; El Bilali 2019; Vermunt et al. 2020). This includes, for example, processes of path dependency supported by “cognitive structures and shared beliefs” (Vermunt et al. 2020) or actors’ roles and identities (Burton 2004a; Sutherland and Darnhofer 2012; Sutherland et al. 2012). Path dependency may be the outcome of development trajectories driven by agents within a given socio-technical regime, and may result in “adaptation-constrained spaces” displaying irreversible lock-ins (Gajjar, Singh, and Deshpande 2019). In particular,

the level of collective action, its impact on individual representation (Paschen and Ison 2014) and the interplay between collective structure and individual agency (van Bers et al. 2019) are stressed as an adequate level of analysis to consider the (in)ability to adapt and transform over time.

Our ambition in the frame of this Ph.D. is to consider the lock-ins acting on the dairy cooperatives and the farmers-members' trajectories from a perspective of complexity. The approach of complexity in human actions and system evolutions states that neither are human actions and system evolutions only driven by the sense making that human beings give to the context in which they evolve and to their actions, nor are they only driven by rationally decomposable and analysable cause-effects relationships (Darnhofer, Gibbon, and Dedieu 2012). We consider, under that perspective, that an evolution, or the absence of evolution, will not result from a mere controllable and rationally measurable addition of factors of change over time, whose effect are proportional to their importance (Byrne 1998). Our exploration aims mainly at considering which complex combination of elements act adversely on trajectories (in our case, trajectories of diversification of production by dairy cooperatives).

6. Outline of the dissertation

Chapter 2 analyzes to which extent the relationship between the dairy cooperative and the farmers-members influenced the consideration of diversification strategies by dairy cooperatives and the dialogue among dairy cooperatives over these diversification strategies during the second half of the twentieth century. The diversification strategies were at the time considered according to the first strategy of product diversification exposed in point 1 (i.e. through R&D developments and investments at the processing and marketing stage, hence not specifically linked to differentiated farming practices). The unfolding dynamics among dairy

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cooperatives and with their farmers-members uncovered by this investigation allowed us to discuss significant and recurring patterns of interplay between the individual agency of the dairy farmers and the decision-making processes in dairy cooperatives, and their effects on the strategic choices made at the scale of the Walloon Region.

Chapter 3 draws on the findings of chapter 2. Chapter 2 considered the effect of the farmer-cooperative interplay on the cooperative's governance. Chapter 3 considers dialectically how governance in consolidation processes may act on this structural agent-structure interplay and either reinforce or mitigate its effects on development pathways in a given context. This chapter hence discusses the governance features (the contract-derived coordination and decision-making mechanisms) of the different cooperative models identified in the historical trajectories. It analyses their effect on the interplay between individual and collective agency and which strategic advantage a given cooperative model may have, depending on context.

Chapter 4 illustrates the findings of chapter 3 by considering the variety of cooperative models present in the current Walloon dairy landscape. This chapter establishes that the co-existence of different cooperative models may define new trajectories of diversification of the dairy productions in the Walloon Region. These trajectories of product diversification answer to the second strategy of product diversification exposed in point 1 (i.e. linked to the specific features of milk as raw material and related farming practices). From a theoretical reflection on cooperative models in chapter 3, this chapter 4 hence moves on to the consideration of the potential of a variety of cooperative models for a transition pathway supporting differentiated farming model in the Walloon dairy sector.

Chapter 5 focusses on the farmer's agency and its embeddedness within the frames of the dairy value chain. This chapter considers how

farmers' trajectories evolve in relation with the value chain, including in relation with the dairy cooperatives. This chapter also discusses theoretically how to approach the farmers' consideration of practices in a heterogeneous farming landscape like that of the Walloon Region. This chapter, finally, also brings additional data on how farmers relate to collective agency.

The significance of these findings for research on transition pathways in the dairy and agri-food sector and the policy implications of these findings at the level of the Walloon Region are discussed in chapter 6.

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Chapter 2 - Historical trajectories of the Walloon dairy cooperatives

Lock-ins to cooperation between dairy cooperatives in diversification pathways rooted in the interplay between the farmer's agency and the governance of the dairy cooperative

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1. Historical trajectories of the Walloon dairy cooperatives: chronological overview and contextual framing

This section synthesises an in-depth investigation combining archival material, published sources and oral sources, also available as a [detailed report](#) written in French (De Herde 2020). The purpose of this section is to outline the main results of this historical investigation. This investigation led to a contextualized analysis of the effect of the cooperative/farmer-member interplay on the cooperative strategies and its impact on the cooperative's diversification pathways, presented in the second section of this chapter. In this first section, in accordance with the practices of historical writings, the references to archival material and to oral sources (interviews) are mentioned as footnotes. The published material is referenced as author-date reference leading to end bibliography. Every subpart is concluded with a graphical summary.

1.1. Main patterns of evolution before the integration in the European Common Market

A graphical summary of this point 1.1 is available in Figure 10 on page 71.

The first dairies emerged in Belgium at the end of the 19th century, to skim milk and produce butter. During the first half of the 20th century, until the Second World War, farmers' dairy cooperatives developed thanks to a support program of the main agricultural union, the Boerenbond (Witte 1990; Segers and Lefebvre 2009). Before the Second World War, dairy cooperatives represented 60% of the dairies producing consumption milk and 80% of the dairies producing butter. The country counted 548 dairies at the eve of the Second World War, of reduced size (dairies transform on average 2 million liters a year – that would represent the amount of milk produced by five dairy farms today). Most dairies

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(80%) were located in the Flemish region (Segers and Lefebvre 2009), the northern part of Belgium also called Flanders.

During the Second World War, the German occupier imposed pasteurisation techniques, leading to a decrease in the number of active dairies. After the war, the Belgian ministry of agriculture maintained this obligation for the remaining 259 dairies (of which 50% were cooperatives) (De Baere 1973).

After the Second World War, the ministry of agriculture developed a support policy of the dairy sector within the frame of the Benelux agreements concluded in 1948. The ministry of agriculture also mandated the *Office National du Lait*, a parastatal organism founded in 1938, to frame the sector with a mandatory accreditation of dairies and certification of dairy products. The support policy included, first, minimum prices for butter, consumption milk, concentrated milk and corresponding import duties. The aim of this first set of measures was to protect the Belgian dairies from the competition from the neighbouring countries, mainly the Netherlands (De Baere 1973). The support policy included, secondly, subsidies for the production of milk powder and cheese (typically derived from the non-fat components of milk, hence considered less vulnerable to market competition) (Vancauwenberghe and Lambert 1974; De Baere 1973). Finally, the support policy fixed a mandatory minimal price to pay to the farmers delivering milk to dairies (De Baere 1973). These measures framed the Belgian dairy production until the 1st of November 1964, where the transitory phase to the European Common Market in milk and dairy products was put in place (De Baere 1973; Ledent and Burny 2002; Vancauwenberghe and Lambert 1974).

The figures tracing the evolution of dairies from 1950 until 1965 (Figure 3) show an important decrease of the use of milk on farm, from more than 60% of farm-use of milk in 1950 to 35% in 1965 (Saldari 1978).

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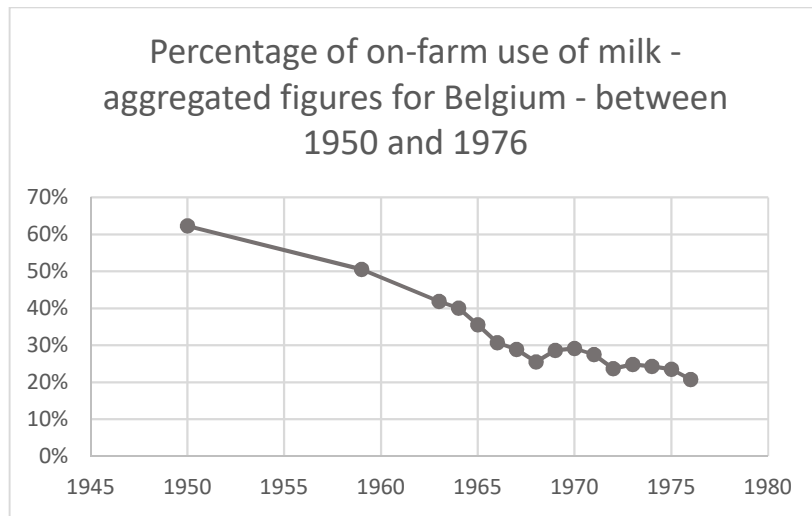


Figure 3 : Percentage of on-farm use of milk - aggregated figures for Belgium - between 1950 and 1976 (Saldari 1978).

Deliveries to dairies increased by 79% during this period (calculated on the base of Ackerman (1966)), while the milk production increased by 15% (calculated on the figures of Saldari (1978)). This has been attributed to the influence of the minimal price paid to farmers (De Baere 1973) and to the relative easiness of delivering milk to a dairy in a context of increasing milk production on farm and favourable to off-farm employment (Saldari 1978; De Baere 1973). The two regions of the country presented however a different evolution on that account: in the Walloon region (also called Wallonia), in the provinces of Namur and Hainaut in particular, with an important tradition of on-farm use of milk, farmers delivered only 20% of the milk produced to dairies in 1965 (Figure 4).

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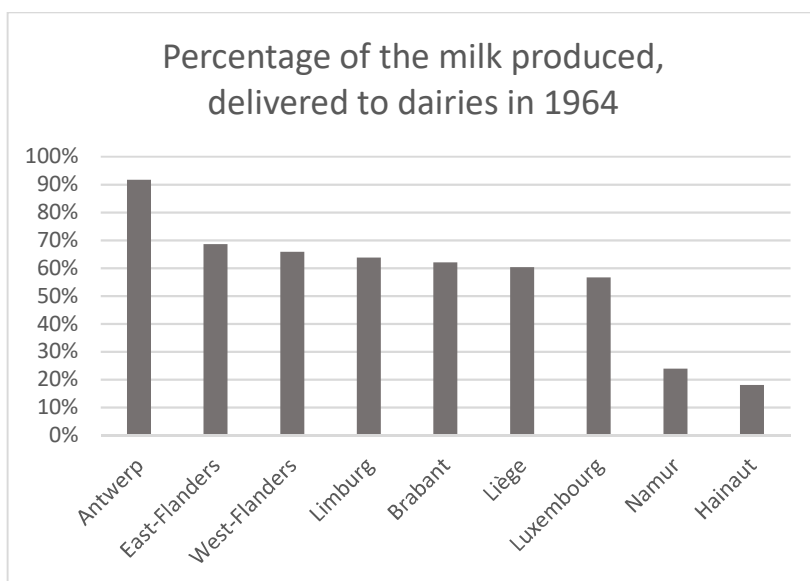


Figure 4 : Percentage of milk produced, delivered to dairies in 1964 (Ackerman 1966)

In terms of production, despite a strong increase in cheese production and a moderate increase in the production of milk powder (Figure 5), the Belgian dairies kept a profile more centred on the production of consumption milk and butter than in the other countries of the European Economic Community (EEC) (Figure 6).

Chapter 2 - Historical trajectories of the Walloon dairy cooperatives

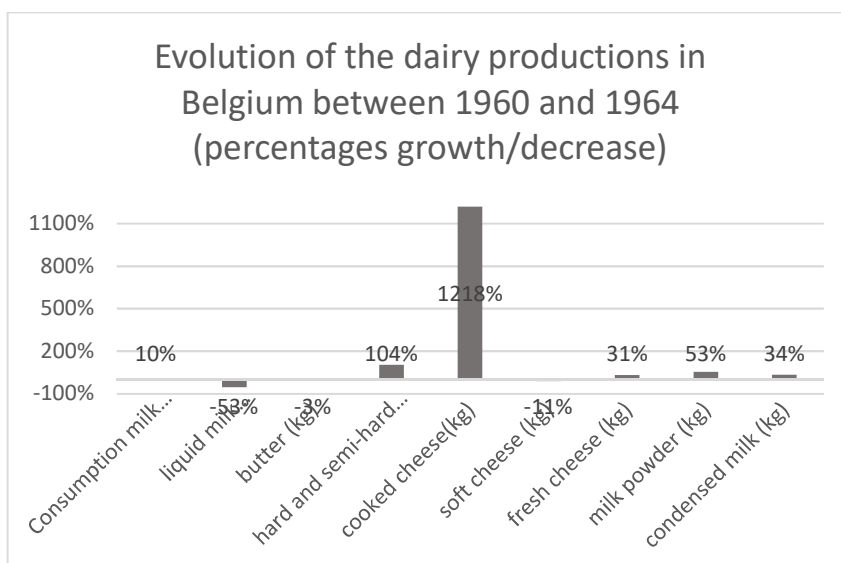


Figure 5 : Evolution of the dairy productions in Belgium between 1960 and 1964 - aggregated data (Union de l'industrie laitière belge 1962; 1966)

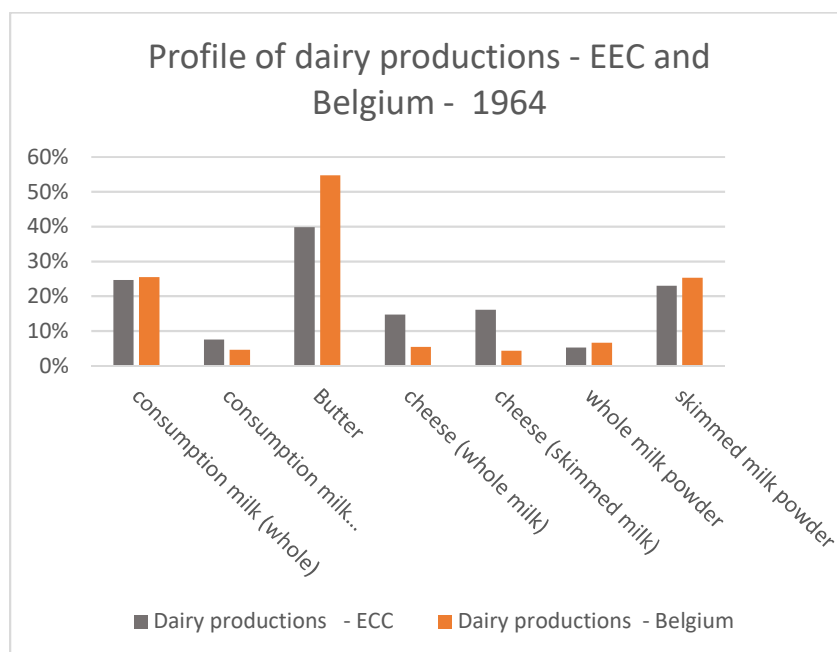


Figure 6 : Compared profile of dairy productions, EEC and Belgium – expressed in percentage of the milk produced, used for a given dairy production (Gay 1968).

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Technological advances in milk processing equipment (automation and increasing capacity of equipment) (De Baere 1973) and commercial competition (Vancauwenberghe and Lambert 1974; De Baere 1973) led several dairies to coordinate their actions as early on as 1947 by grounding inter-cooperative structures [further described in the text as “intercooperatives”] investing in milk processing plants (Niesten, Raymaekers, and Segers 2002). The Flemish region counted several of them, for the production of consumption milk or milk powder. The Flemish region produced at the time most of the milk powder and consumption milk, while the Walloon Region presented a profile centred on butter and soft cheese (Figure 7). More than half of the milk delivered to the dairies in the Walloon Region, was delivered as cream at the time (Figure 8), farmers using the skimmed milk on farm (Saldari 1978).

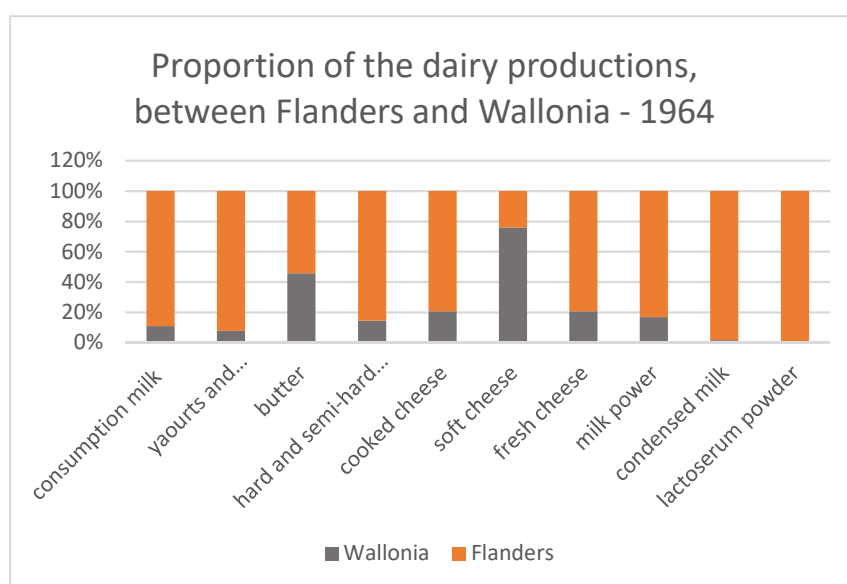


Figure 7 : Compared profile of dairy productions, Flanders and Wallonia, in 1964 (Union de l'industrie laitière belge 1966)

Chapter 2 - Historical trajectories of the Walloon dairy cooperatives

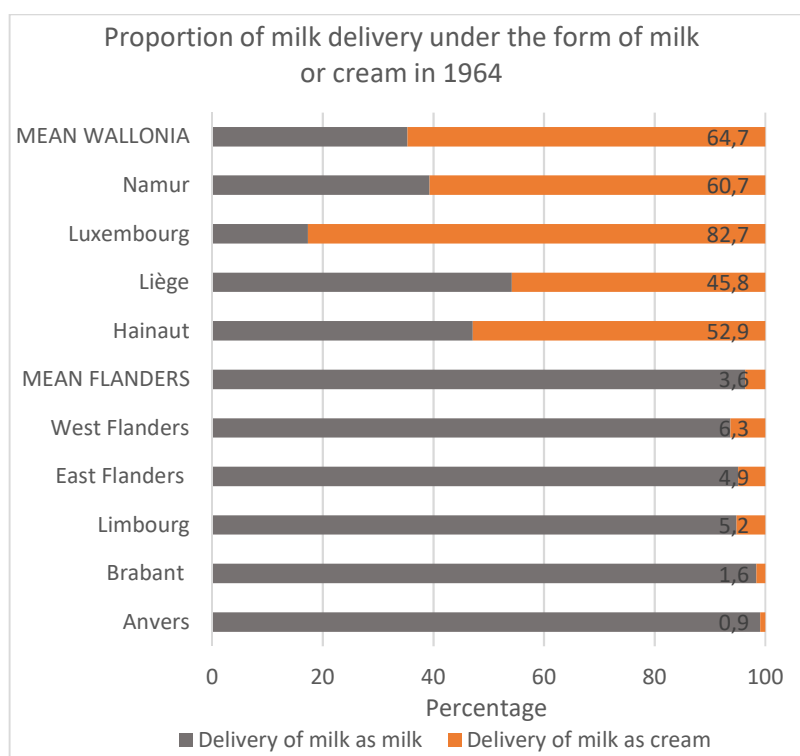


Figure 8: Proportion of milk delivery under the form of milk or cream in 1964 – expressed in percentages (Saldari 1978 based on the statistical data from the Union de l'Industrie Laitière belge)

There were no intercooperatives in the Walloon region, except one in the province of Liège, named Interlait, for milk consumption. A higher proportion of smaller-scale dairies remained present in the Walloon Region, compared to the Flemish region (Flanders) (Figure 9) (Ackerman 1966).

Challenges of collective agency in the Walloon dairy sector

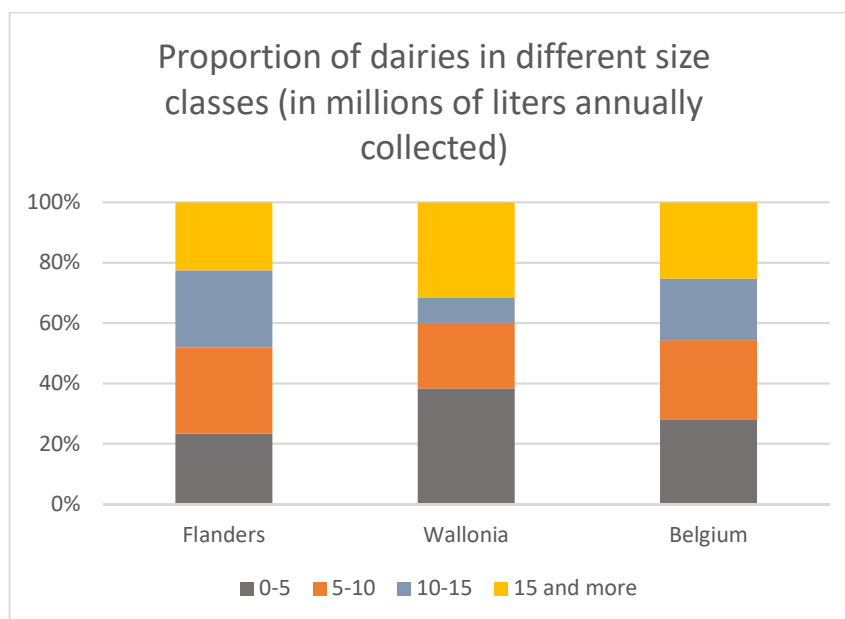


Figure 9 : Proportion of dairies in every size classes – aggregated data (Ackerman 1966).

We present hereunder in Figure 10 a graphical summary of the main features of evolution between 1948 and 1965.

Chapter 2 - Historical trajectories of the Walloon dairy cooperatives

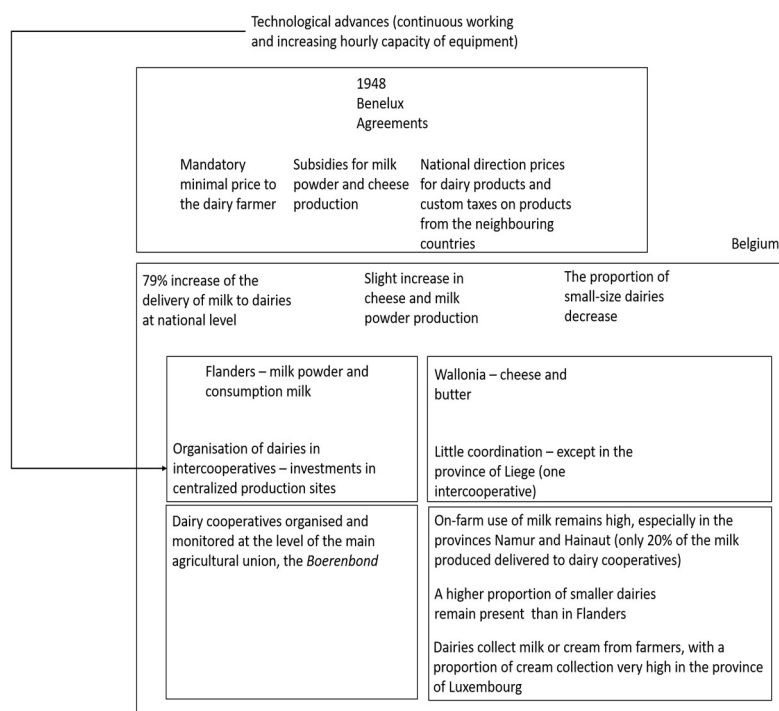


Figure 10 : Graphical summary of the main patterns of the sector before the integration of the CEE common market

1.2. The EEC Common Agricultural Policy led to evolutions in the Walloon dairy sector between 1964 and 1968

Graphical summary of this part in Figure 13 on page 78.

The transitory phase of the European Common market coincides with structural changes in the organisation of Walloon dairies and in their production patterns (Union de l'industrie laitière belge 1962; Verkinderen and Ackerman 1964; Vancauwenberghe and Lambert 1974; Union de l'industrie laitière belge 1966). The European Common Market

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in milk and dairy products came into effect in July 1968 (De Baere 1973; Ledent and Burny 2002).

During the transitory phase that started in November 1964 the Belgian state kept guaranteeing a minimal milk price paid to the dairy farmer – later suppressed in 1968 (Vancauwenberghe and Lambert 1974)¹. The Belgian state suppressed the subsidies to cheese and milk powder and the EEC implemented the intervention mechanisms for milk powder and butter (De Baere 1973).

In the provinces Hainaut, Namur and Luxembourg, where dairies were previously uncoordinated, cooperative dairies and private dairies associated in intercooperatives, with different patterns of management and reallocation of production. In the province Hainaut, the dairies retained a separate management, but coordinated the allocation of the milk collected between the sites and specialized in complementary productions. In Namur and Luxembourg, the dairies centralized, between 1966 and 1970 (Union de l'industrie laitière belge 1966; 1970b), the management and production on a unique production site of the intercooperative and closed the production units of the dairy cooperatives or private dairies.

The investments oriented the production in the Walloon region in a less diversified pattern than before, with a strong focus on milk powder, and a decrease of the cheese production. The evolution in the Walloon Region contrasted strongly with the evolution of the productions in Flanders at that time, where dairies kept a more diversified pattern of production (Figure 11).

¹ Archives de l'Etat à Arlon, Fonds Fernand Lanotte (AEA – FFL), boîte 068-0041. Report entitled « Evolution de l'économie laitière belge », synthesis of the discussions of the special working group of the Office National du Lait, 3 June 1970. Typewritten report. According to this source, the minimal milk price paid to the dairy producers in Belgium was higher than the average price in other EEC countries.

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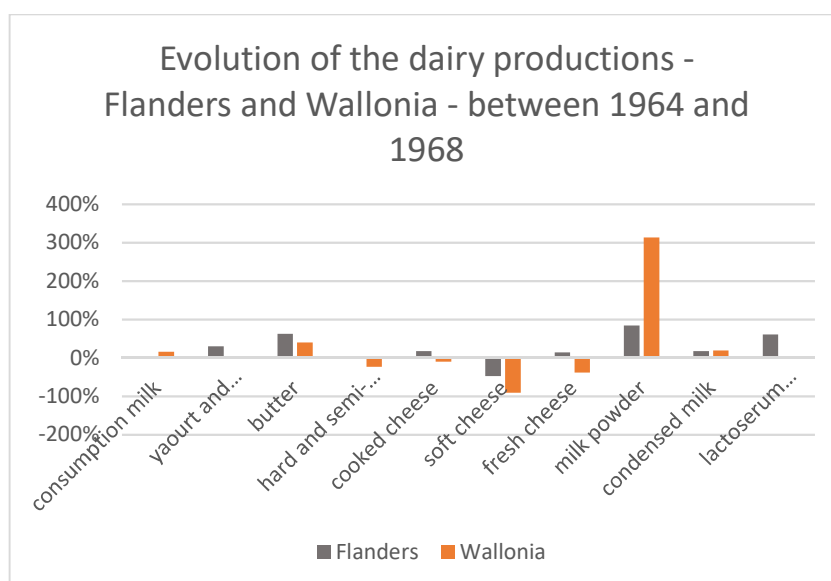


Figure 11 : Evolution of the dairy productions in Flanders and Wallonia between 1964 and 1968 (Union de l'industrie laitière belge 1966; 1970b)

Nevertheless, at the level of particular dairy intercooperatives, like the intercooperative of the province of Namur and the intercooperative of the province Liège, investments were oriented towards diversified productions, like consumption milk and milk derivatives (yaourt)². Walloon dairies saw, at the time, the milk delivery rise and the delivery of cream diminish (figure 12). The proportion of cream delivered to dairies in 1968 remained much higher than in the Flemish Region : 88% of the national cream delivery in 1964 and 92% of the cream delivery in 1968 takes place in the Walloon Region (Union de l'industrie laitière belge 1966; 1970b). The cream delivery concerned more than 14000 farmers (Office National du Lait 1977), for a quantity (in milk equivalent) that spanned from 8% (based on the figures from Saldari (1978)) to 24% of the total amount of milk delivered to dairies in Belgium (based on the

² Interview d2 – Le Sillon belge, 24 September 1976, « Les laiteries de Sambre et Meuse ».

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figures from the Union de l'Industrie Laitière Belge (Union de l'industrie laitière belge 1970b)).

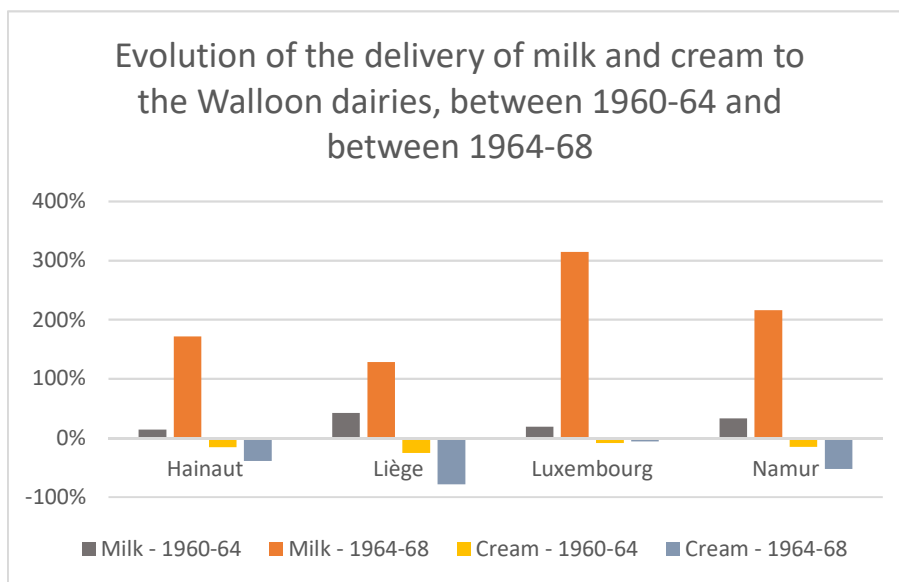


Figure 12 : Evolution of the delivery of milk and cream to the Walloon dairies, between 1960-64 and between 1964-48 (on the base of the figures in (Union de l'industrie laitière belge 1962; 1966; 1970b))

The amount of investments in the new infrastructures of the new intercooperatives in the the provinces of Namur and Luxembourg was high. A loan of 222 million of francs dedicated at the construction of a production plant capable of absorbing 70 millions of litre is granted to the intercooperative of the province of Luxembourg³ – which setted the intercooperative close to the category of the 10% biggest dairies (collecting between 75 and 100 millions of litres in 1975) (Institut National de Statistique 1976). We do not have the figures for the intercooperative of the province of Namur, but we know that the new infrastructure was partly financed by retaining automatically 2,5% on the

³ AGR, archives du CMCES, n°1354, sous-dossier 513-10, file « notes », decision of the CMCES of the 26th November 1968, and the accompanying report « Note pour le CMCES - ministère des affaires économiques » of the 18th November 1968.

revenues of farmers⁴. At the time, we noticed in the archives of the intercooperative ILA (province of Luxembourg) accounts of dissatisfaction of farmers in front of the concentration of production and management, expressed by the agricultural unions. Farmers also expressed distrust regarding the analysis of milk done by the intercooperative ILA to proceed to the payment to the farmer⁵. According to a report of analysis written for the *Office National du Lait*, this distrust was the source of an attitude where farmers tended to change their affiliation from a dairy cooperative to another, to hope get better results in terms of milk composition⁶.

The entry of Belgian milk sector into the European Common Market was a discussed topic at various levels of the sector, as early as 1962 according to the archives consulted⁷. The dairy production represented a quarter of the total added value generated in the agricultural sector at the time⁸ (De Baere 1973). This explains why the situation of the Belgian dairies sparked discussion: within commissions at the *Office National du*

⁴ Le Sillon belge, 22 November 1975, « Floreffe à l'écart de la concentration laitière », page 3.

⁵ AEA – FFL, file 618-0057 – various letter exchanges between the farmers' union and the director of the intercooperative ILA (province of Luxembourg) ; see also in the sub-file "UPA", the report of the representative of the UPA in the province of Luxembourg, on page 3 of the "Compte rendu de la réunion du 12 novembre 1968 de la commission lait"

⁶ AEA-FFL, file 618-40 "Industrie Laitière belge", report dated 19 May 1963 by M.Berque, F.DAms, H.Godbille *La production et l'Industrie Laitière belge – résumé d'un travail réalisé par le Service de la Production de l'O.N.L.*

⁷ AEA – FFL, file 618-0045 "Office National du Lait", letter from the 21 December 1962, from the director of the Office National du Lait, K.L.Devriendt, to Fernand Lanotte, informing him that a Commission has been set up to discuss the rationalisation of the milk supply chain; Reports of the reunions of the Commission from the 20 December 1962 to 9 February 1963. According to correspondence present in the file 618-0043, sub-file "correspondence membres", Fernand Lanotte was then president of the *Union de l'Industrie Laitière belge*.

⁸ AEA-FFL-file 618-40 « Industrie Laitière belge », Union de l'Industrie Laitière Belge, *Rapport sur la situation générale de l'industrie laitière belge*, 1965

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*Lait*⁹, at the level of the national government¹⁰, within organisations representing dairy cooperatives and industries¹¹ and the farmers' unions¹², as well as in the agricultural press¹³. The main concern of the all actors at the time seems to have been the ability of the Belgian dairies to face the competition of dairies of the neighbouring countries, following a trend of upscaling in production and marketing capabilities.

The discussions at the level of the Belgian government, reunited in restricted committee in the *Comité Ministériel de Coordination Economique et Sociale*, concluded in the necessity to define a rationalisation plan at national level and offer loans for dairies through the *Fonds d'Investissement Agricole* by mobilizing the European Agricultural

⁹ AEA – FFL, file 618-0045 “Office National du Lait”, letter of the 4th of February 1963 from the general secretary of the Union de l’Industrie Laitière Belge and annexed survey. These commissions, according to these documents, involved experts from the *Office National du Lait* and representatives from the professional organisations of the sector. Among the names cited as members of the commission, in the reports mentioned in the preceding footnote, we identified the president of the main Flemish agricultural union (*Boerenbond*), the president of the main Walloon agricultural Union (*Federation Nationale des Unions Interprofessionnelles Agricoles*), the president of the *Union de l’Industrie laitière belge* and the president of the *Algemeen Verbond der Cooperative Zuivelfabrieken*, both institutions representing the dairy industries and cooperatives (the latter representing specifically the Boerenbond-related dairy cooperatives).

¹⁰ AGR, archives du CMCES, n°1354, sous-dossier 513-10, file « notes ». *Note pour le Comité de coordination Economique et Sociale*, Ministère de l’agriculture, 13 April 1965 and *Note pour Monsieur le Premier Ministre*, Service d’Etudes et de coordination économique, 6 May 1965.

¹¹ AEA-FFL-file 618-0045 «Office National du Lait », letter of the secretary general of the Union de l’Industrie Laitière Belge, G.Vandenabeele, 4 February 1963, inviting the managers of dairies to discuss the rationalisation of the dairy industry, and annexed survey

¹² AEA-FFL-file 618-0045 «Office National du Lait », Letter of the 12 February 1963 from the Federation Nationale des Unions Interprofessionnelles Agricoles to the *Office National du Lait* reacting to the propositions made by the Commission.

¹³ *Le Sillon Belge*, 14 November 1964, article « La concentration de l’industrie laitière », p.6 ; 19 December 1964, « L’agriculture belge à un tournant : bilan et perspectives économiques » ; 20 March 1965 – page 18 « La structure de l’industrie laitière – En attendant le plan de rationalisation annoncé par M.Héger, ministre de l’agriculture ».

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Guarantee Fund (EAGF)¹⁴. However, it is unclear whether the government actively directed the merging of dairies at the time in another way than by liberating subsidies and offering state guarantees for investment loans. According to letter exchanges between dairy cooperatives in the province of Luxembourg – it appeared that the public authorities acted indirectly, at the time, by changing rules in the frequency of milk collection – making collection more costly and leading dairy cooperatives to merge, and by restraining the criteria of homologation of dairy industries¹⁵. The Union of the Belgian dairy industries expressed at the time the will of the dairies to take matters in their own hands rather than to let the state intervene¹⁶ and advised at the time to take the restructuring with care, considering the related investment costs¹⁷.

¹⁴ AGR, archives du CMCES, n°1354, subfile 513-10, decision of the CMCES of 7 May 1965.

¹⁵ AEA-FFL-file 618-0016 “ILA-RECOGNE”, extrait de délibération de l’assemblée générale extraordinaire des coopérateurs du 24 octobre 1964 de la Laiterie de la Lomme à Recogne – copie certifiée conforme ; courrier du notaire Jacques Demblon, du 20 décembre 1965 to Fernand Lanotte, directeur de la société beurrière de Recogne.

¹⁶ AEA-FFL-file 618-0045 «Office National du Lait », letter of the secretary general of the Union de l’Industrie Laitière Belge, G.Vandenabeele, 4 February 1963, inviting the managers of dairies to discuss the rationalisation of the dairy industry, and annexed survey

¹⁷ AEA-FFL-file 618-40 « Industrie Laitière belge », Union de l’Industrie Laitière Belge, *Rapport sur la situation générale de l’industrie laitière belge*, 1965

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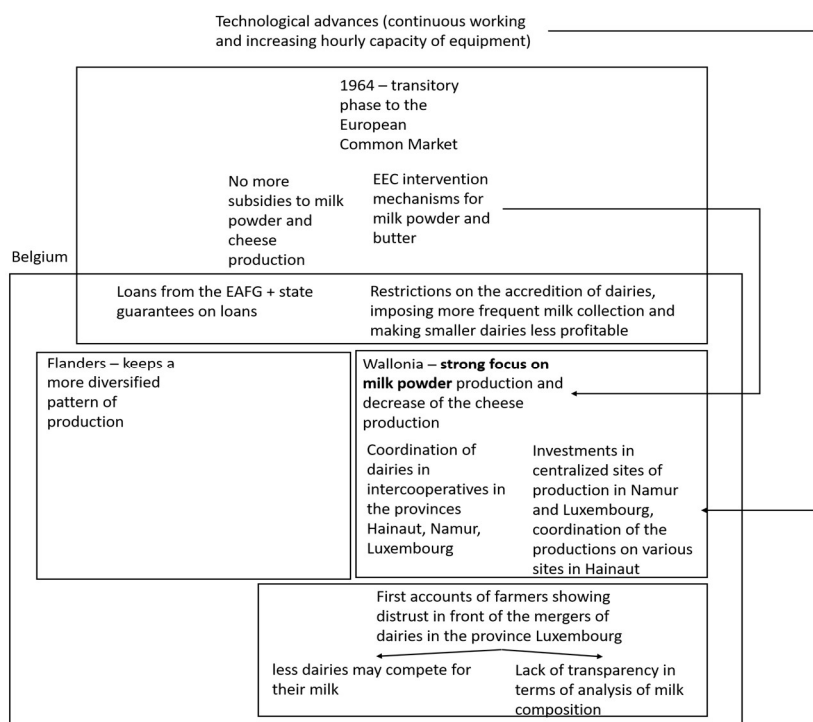


Figure 13: Graphical summary: evolution between 1964 and 1968

1.3. The Mansholt plan generates economic difficulties for the Walloon dairy cooperatives

Graphical summary of this part in Figure 17 on page 88.

The measures taken to address the overproduction of the dairy products in the EEC in 1968 (within the frames of the Memorandum on the reform of the Common Agricultural Policy, also called “Mansholt plan”) included premiums for farmers who valorised milk on farm and converted their activities to meat production (Saldari 1978; Ledent and Burny 2002; Centre virtuel de la connaissance sur l’Europe 2021; Commission Européenne n.d.). The effects of these measures were strong on the intercooperatives of the in the provinces Hainaut, Namur and

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Luxembourg¹⁸, due to the herd characteristics at the time: with the exception of the province Liège, all other provinces of the Walloon region hosted dual-purpose cattle breeds (Figure 14 and Figure 15), supporting an easy conversion of the farm activities towards meat production.

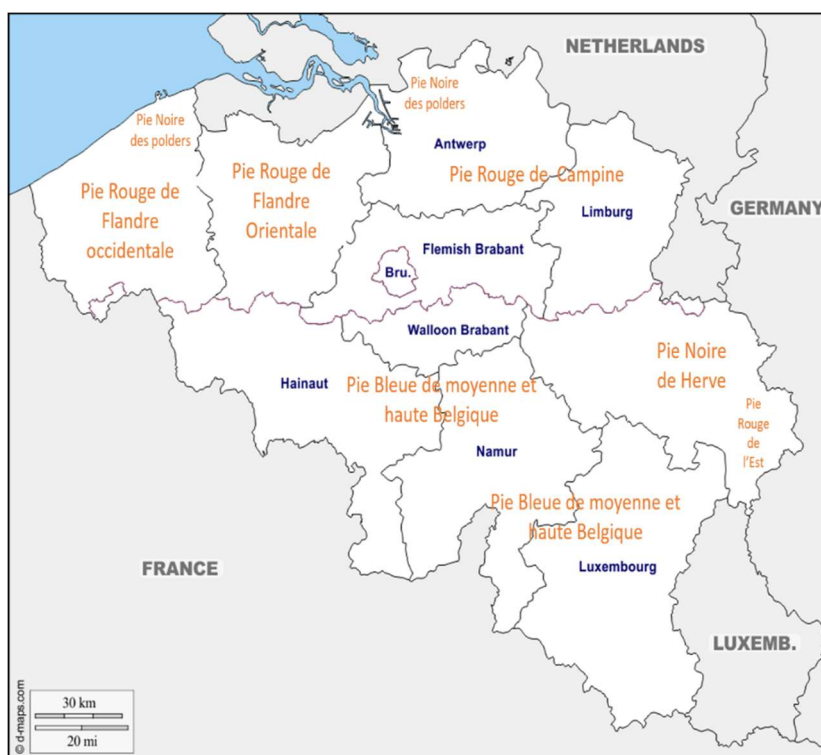


Figure 14 : Geographical distribution of the various cow races in Belgium (Van Hecke 1976). The herd selection was legally framed by the law of 20 June 1956 – the geographical zones of the different cow races were administratively determined (De Baere 1973). These administrative zones were suppressed in 1971 (Van Hecke 1976). Crossings between races were authorized by the Royal Decree of 9 March 1974 (Institut Economique Agricole 1975).

¹⁸ AGR, archives du CMCES, n°1354, sub-file 513-10, file « notes », Note du Ministère de l'Agriculture au CMCES du 27 juin 1975

Challenges of collective agency in the Walloon dairy sector

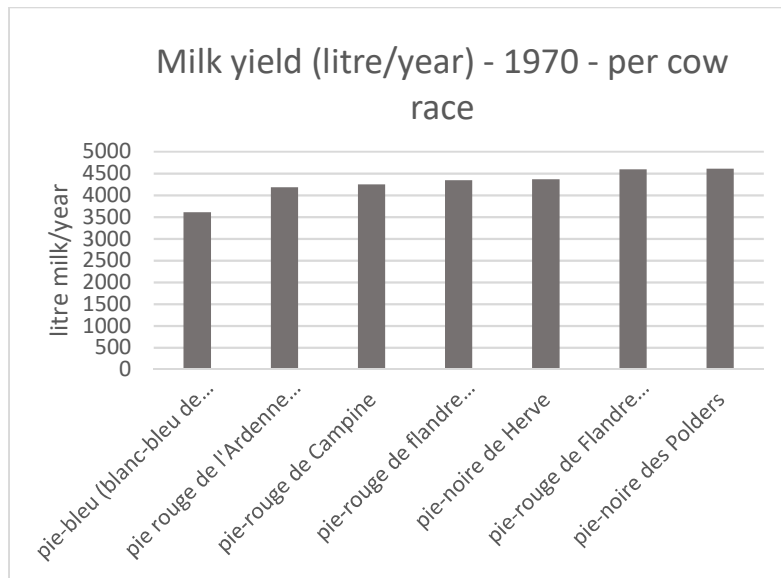


Figure 15 : Milk yield of the different cow races (Saldari 1978)

Furthermore, the tradition of on-farm processing and use of milk had remained strong in Namur and Hainaut (Figure 16). Despite an increase in the milk delivery to dairies as from 1964, the EEC measures induced a resurgence in on-farm butter fabrication (De Baere 1973).

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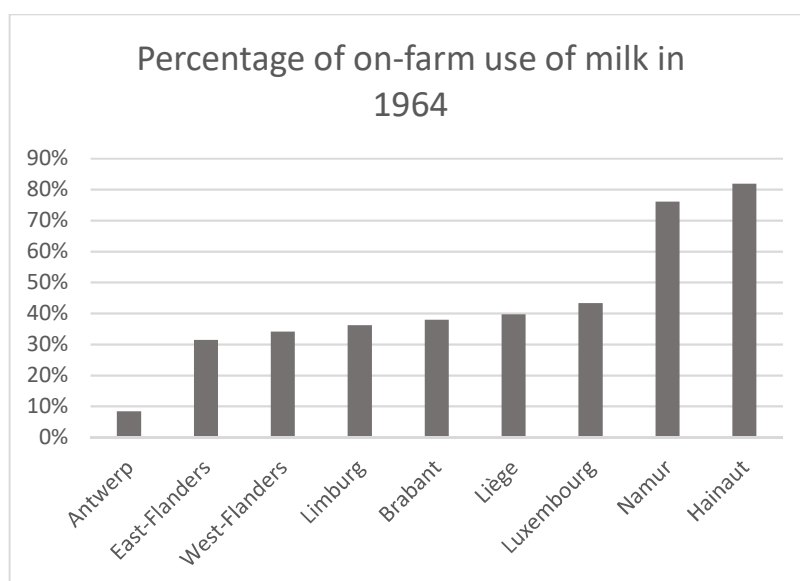


Figure 16 : Percentage of on-farm use of milk in the various Belgian provinces in 1964 (Ackerman 1966)

The conversion of farms to meat production and the increasing on-farm use of milk induced a decrease in milk delivery to the dairy cooperatives, which affected the profit margins of investments calibrated for a given quantity of milk¹⁹, in a context of rising production costs due to oil peaks²⁰.

Beyond the EEC measures and the conjuncture factors, the Walloon dairy cooperatives – with the exception of the dairy cooperatives of the province of Liège - faced structural factors linked to the herd density and

¹⁹ AEA-FFL, file 618-0016, green file containing a typewritten report written by Bernard Calicis at the request of Fernand Lanotte, *Situation de l'économie laitière dans le Sud du Pays*, 1973. Report attributed to Bernard Calicis based on his previous oral account of writing such a report at the request of Fernand Lanotte, for the minister of agriculture R.Lavens. The details in the report can only come from someone who indeed had access to the accountability of the concerned dairy cooperatives. Table X in this note stresses that the maximum use of the processing plants is on average of 48% at the time.

²⁰ Interviews p1, d2 ; AEA-FFL, file 618-0044, Rapport annuel 1970, Union de l'Industrie Laitière Belge.

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features (Table 2) that made milk collection more costly and affected industrial profitability.

Table 2 : Factors linked to herd and farming system features that affected the profitability of investments in milk processing tools in cooperative dairies in the 60s, 70s and 80s in the provinces Hainaut, Namur and Luxembourg (Ministère de l'agriculture 1975b; Van Hecke 1976; Ackerman 1966; De Baere 1973)

Structural factor	Features	Post affected	
Geographical herd density	Production per square kilometre represents in the provinces 93000 litres/km ² , much lower than in the province of Liège and in Flanders (141000 l/km ²)	Milk collection	More costly (higher distance/liter milk collected)
Herd features	Mixed races with a lower milk production per cow	Milk collection	More costly (higher distance/liter milk collected)
Herd features combined with the farming system based on grassland	Mixed races with a stronger seasonality of milk production	Profitability of transformation equipment	Variability of the quantity of milk transformed around the year, leading to losses in profitability of the processing tools
Collection of cream and milk by the farmers (until the 80s)	Until the 80s, the dairy cooperatives collected separately milk and cream from farmers who used skimmed milk on-farm	Milk collection	More costly (double collection)

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The milk and cream collection areas of the dairy cooperatives overlapped, and no cooperation took place to optimize milk collection. The competition on the market of milk consumption and butter was strong. The dairies faced heavy financial charges linked to their investments²¹. Their situation of late entrants on the market of milk consumption and other milk derived products made their situation difficult²² in front of an increasingly concentrated distribution sector (Ackerman 1971; CRISP 1972; 1978; Vancauwenberghe and Lambert 1974).

At the time, a report of analysis from the *Office National du Lait*²³ denounced, as additionally aggravating factor, the evolution of the legislation around the payment of milk to farmers. Until 1968, dairy farmers were used to having a guaranteed price, replaced as 1968 by an indicative price, and higher than that CE – indicative price (De Baere 1973; Vancauwenberghe and Lambert 1974). This configuration did not favour the consideration, by the dairy farmer, of the challenges related to milk processing and the generation of added-value on the markets of end-products. This triggered, according to the report of the *Office National du Lait*, an attitude of dairy farmers focused on the price received by the dairy cooperative and a consequent logic of competition between dairy

²¹ AEA-FFL, file 618-0016, green file containing a typewritten report written by Bernard Calicis at the request Fernand Lanotte, *Situation de l'économie laitière dans le Sud du Pays*, 1973 ; AGR, archives du CMCES, n°1354, sous-dossier 513-10, file « notes », Ministère de l'agriculture, note au CMCES, 5 January 1973. The interviewee u1 added that the Walloon dairy cooperatives had invested in tanker trucks to face the increasing milk delivery since the transitory phase to the EC market, and that it was a supplementary post of investments, on top of the investments in the processing plants. according to the interviewee u1, the dairies faced extra burden linked to the investment in Entretien avec Jean-Pierre Champagne 2017, Note au CMCES du 5 janvier 1973 - AGR

²² AEA-FFL, id.

²³ AEA-FFL, file 618-0041 "Union de l'industrie Laitière belge", *Synthèse des discussions approfondies d'un groupe de travail spécial créé au sein de l'Office National du Lait*, typewritten report, 3 June 1970.

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cooperatives in terms of price paid to dairy farmers and aggravating the overlap of milk collection areas and the related costs.

Given the economic difficulties, the intercooperative dairy of the province of Namur was overtaken in 1971 by the intercooperatives of the province of Hainaut and Luxembourg, which further merged into a unique dairy cooperative in 1975, called “Sud-Lait”²⁴. Sud-Lait collected a quarter of the milk produced in the Walloon region²⁵. The ministry of agriculture confided the management of that new cooperative to a team of directors coming from the intercooperative of the province of Liège, Interlait²⁶. The Institut National de Crédit Agricole, a public bank founded in 1937 (Crelan 2020), granted a loan of 870 millions euros to Sud-Lait. The remaining debt of the three dairies towards the Institut National de Crédit Agricole was covered by the state²⁷. This merging operation took place whereas dairies and public organisms had been discussing the restructuring of dairies at national level since 1971 within the *Commission Nationale du Lait*²⁸. The recommendations of the

²⁴ Le Sillon belge, 9 décembre 1977, « Nouvelle hémorragie pour Sud-Lait », page 5

²⁵ Archives Bernard Calicis, Dossier n°49-1, second file. Allocution de Mr Mousset, Président de Sud-Lait, le lundi 22 juin 1981, à Sofitel Wépion, à la réunion d’information aux parlementaires wallons. Typewritten.

²⁶ AGR, archives du CMCES, n°1354, sous-dossier 513-10, file « notes », Note du Ministère de l’Agriculture au CMCES, 27 June 1975 ; decision of the CMCES of 31 July 1975 ; Archives Bernard Calicis, file n°25 « Interlait », Acte constitutif – Interrégionale Sud-Lait, société coopérative, Annexe au Moniteur belge du 18 septembre 1975

²⁷ AEA-FFL, file 618-0039 « Sud-Lait 1975-1988 », Convention de vente entre la Société beurrière d’Ardenne et Gaume et la société Sud-Lait représentée par Alphonse Marcotty et Victor Trinon.

²⁸ AEA-FFL – file 618-0041 « Union de l’Industrie Laitière belge », sub-file « 1972 – Etude d’un plan officiel de restructuration du secteur laitier ». Letter of invitation of F.Lanotte, president of the *Union de l’Industrie Laitière Belge*, to the meeting of the *Commission nationale du lait* of 9 Novembre 1972, and annexed report of the meeting of the 5 October 1972. The *Commission Nationale du Lait* of 1972 gathered representatives of the Ministry of agriculture, the presidents of the *Union de l’Industrie laitière belge* and of the *l’Algemeen Verbond van Cooperatieve Zuivelfabrieken* (representing respectively dairy industries – including dairy cooperatives, and dairy cooperatives linked to the main Flemish union

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Commission was to support the creation of a limited number of integrated groups of dairy production, covering milk collection to commercialization of products²⁹. Discussions between the dairies of the Walloon region from the provinces Namur, Hainaut and Luxembourg took place as from 1972³⁰, but failed to come to concrete results due to the inability of dairy directors to agree to a common plan³¹. According to various interviewees (u1, u2, a1, d2), the Walloon region did not present a unified philosophical landscape and dairies and farmers' unions belonged to various philosophical currents, which constituted a context adverse to dialogue among dairies.

The direction of the new dairy cooperative Sud-Lait proceeded to radical changes on the production sites, leaving in the provinces of Hainaut and Namur no production site, relocating the activities of production of derivatives of milk and cream on the site of the intercooperative of the province of Liège, Interlait. The only milk transformation activity left in the provinces Hainaut, Namur and

Boerenbond), the representatives of the farmers' union, of the *Office National du Lait*, and a representative of the Ministry of Economic Affairs

²⁹ AEA_FFL, – file 618-0041 « Union de l'Industrie Laitière belge », sub-file « 1972 – Etude d'un plan officiel de restructuration du secteur laitier », report of the meeting of the 5 October 1972

³⁰ AEA-FFL, file 618-0016, green file containing a typewritten report written by Bernard Calicis for Fernand Lanotte, *Situation de l'économie laitière dans le Sud du Pays*, 1973. AGR, archives du CMCES, n°1354, sous-dossier 513-10, file « notes », Ministère de l'agriculture, note au CMCES, 5 January 1973. AEA-FFL, file 618-0039 « Sud-Lait 1975-1988 », report of 10 December 1973 « Groupe d'Etude – avenir des laiteries du Sud » - this document exposes cooperation projects between the various directors of the dairy cooperatives from the province Hainaut, Luxembourg and Liège on geographical location of productions and marketing issues.

³¹ Archives Bernard Calicis, Box"Coferme", file « Relations ADS avec Cofermee ». Letter from InterSud of the 28 February 1978 and report annexed of the meeting of the 16 February 1978 – the representative of the ministry of agriculture (who happens to be the interviewee m1) blames the "lack of imagination" of the dairy directors in this report ; See also Saldari (1978) mentioning "fundamental divergences" between directors of dairy cooperatives about common plans of development of a strong commercial organization at the scale of the Walloon Region.

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Luxembourg within the cooperative Sud-Lait was the production of milk powder and butter on the site of Recogne, in the province of Luxembourg³². One actor of the province of Hainaut had advised at the time to relocate all industrial dairy productions in an existing production plant in the province of Namur, well situated in terms of communications and centered in the territories of milk collection of Sud-Lait³³. This solution was not adopted. The choice to relocate the productions with a higher added value (derivatives of milk and cream) on the site of the intercooperative from Liège, Interlait, was criticized by actors from the intercooperatives of the other provinces³⁴ and by some ministers³⁵ as a strategy driven by the interests of the intercooperative Interlait. The intercooperative Interlait would have reduced competition with her own production and secured her milk procurement this way³⁶.

The reports of analysis realized at the request of the regional ministry of agriculture in the 80s³⁷ stressed that the location of the production site of the cooperative in the province Luxembourg was non-strategic. The dairy was decentralized from its collection area, and remote from product distribution channels. The question, whether the choice to maintain activities on the site of Luxembourg, despite its weak geographical

³² Archives Bernard Calicis, file 49-1, second subfile, Letter of Victor Trinon, director of Sud-Lait and of the intercooperative Interlait, to the Minister of Agriculture A.Lavens, 2 February 1976

³³ Archives Bernard Calicis, file n°25 « Interlait », letter to Victor Trinon 13 August 1975

Archives Bernard Calicis, file n°25 « Interlait », letter to Victor Trinon 13 August 1975

erme”, Rapport introductif à l'action de valorisation des productions naturelles de l'Entre Sambre et Meuse : label de qualité, coopérative laitière, transformation des produits laitiers ; file 49-1, second subfile, Letter of Dom Guerric Baudet to the Minister of agriculture and annexed report, 16 February 1978

³⁵ AGR – CMCES n°1354, subfile 513-10 – report of the meeting of the CMCES of 18 July 1975

³⁶ Interviews d2, d7

³⁷ Archives Bernard Calicis, File “politique agricole CEE S20”, subfile P17, Report written by McKinsey and Co, *Renforcer les filières agroalimentaires wallonnes. Rapport réalisé pour le Ministère de l'Economie Régionale wallonne*, 1984.

position, was made given the necessity to support this province in economic difficulties, remains to be explored³⁸. The rationalization of the productions of this cooperative was contested to the point that it led to the creation of a dissident cooperative in the province of Hainaut (Coferme), that sold its milk directly to other dairies and further established a cheese production cooperative³⁹. One small cooperative of the province of Luxembourg (Chéoux) also refused to join the merger⁴⁰.

Similarly to the earlier mergers in the 60s (see point 1.2), there were, in this merger and creation of the dairy cooperative Sud-Lait, in 1975, indirect accounts that farmers expressed suspicions as to whether the new dairy cooperative was honest in terms of analysis of milk composition⁴¹. Farmers would have expressed a general sense of distrust in front of a dairy cooperative that did not offer them the same proximity services as their former dairy cooperative. The actors who created the dissident dairy cooperative in the province of Hainaut attribute to this distrust the tendency of farmers to deliver their milk to Flemish cooperatives offering a better price for the milk, and the consequent necessity to react to that by re-creating a dairy cooperative in the province⁴².

³⁸ AEA – FFL, file 618-0057 “UPA Alliance Agricole Chambre provinciale d’Agriculture”, subfile « dossier Alliance agricole belge ». See the report of the Conférence Economique du Luxembourg 1976, which hints at this.

³⁹ Archives Bernard Calicis, box "Coferme", file "relations ADS avec Coferme", Annexe au Moniteur belge 12 January 1978, Société coopérative fermière de l’Entre Sambre et Meuse, en abrégé Coferme.

⁴⁰ Interview d6

⁴¹ Le Sillon belge, 7 October 1977 “Sud-Lait ou les maux de la concentration » ; Archives Bernard Calicis, file 49-1, second subfile, Letter of Dom Guerric Baudet to the Minister of agriculture and annexed report, 16 February 1978

⁴² Interview d 2 ; Archives Bernard Calicis, Box “Coferme”, File “Relations ADS avec Coferme”, Rapport introductif à l’action de valorisation des productions naturelles de l’Entre Sambre et Meuse : label de qualité, coopérative laitière, transformation des produits laitiers

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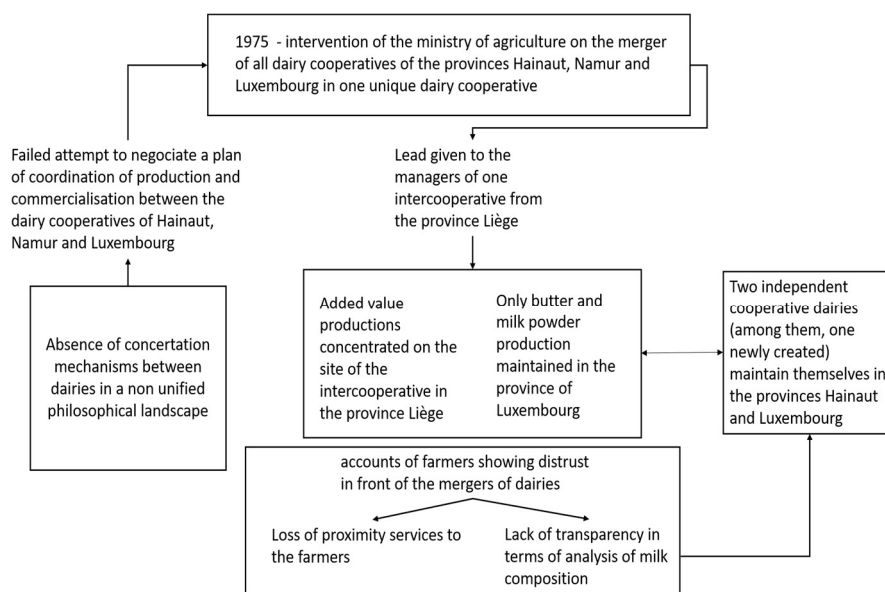


Figure 17 : Graphical summary of the merger operation of the dairy (inter)cooperatives of the provinces Hainaut, Namur and Luxembourg in one vertically integrated cooperative (1975)

1.4. New attempts at coordination of the dairy cooperatives, at the scale of the whole region, in the 80s

Graphical summary of this part in Figure 28 on page 100

The 1980s saw an evolution of the political landscape: Belgium became a federal state and the regions were now in charge of the agricultural matters. As from the beginning of the 80s, the agricultural policy was under the direction of the regional ministry of agriculture. The major Walloon agricultural Union, the UPA, supported this evolution⁴³.

⁴³ Archives Bernard Calicis, file "politique agricole", discourse of Jean-Pierre Champagne, general secretary, at the 56th annual convention of the UPA. See also AEA-FFL, file 618-0057, subfile "UPA", *Compte-rendu de la Commission Laitière des UPA, reunion du 31 octobre 1972*, and AEA-FFL, file 618-0041 "Union de l'Industrie Laitière belge", *Rapport de la reunion restreinte de concertation dans le cadre de la CBL tenue le 28 juillet 1971*. These documents contain accounts that there had

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The introduction of the milk quota in 1984 at EEC level (Ledent and Burny 2002) and their reinforcement in 1986 (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1987) lead to a decrease of milk delivery to the Belgian dairies (Figure 18), which increased the competition for milk among dairies, including with dairies of the neighbouring countries⁴⁴.

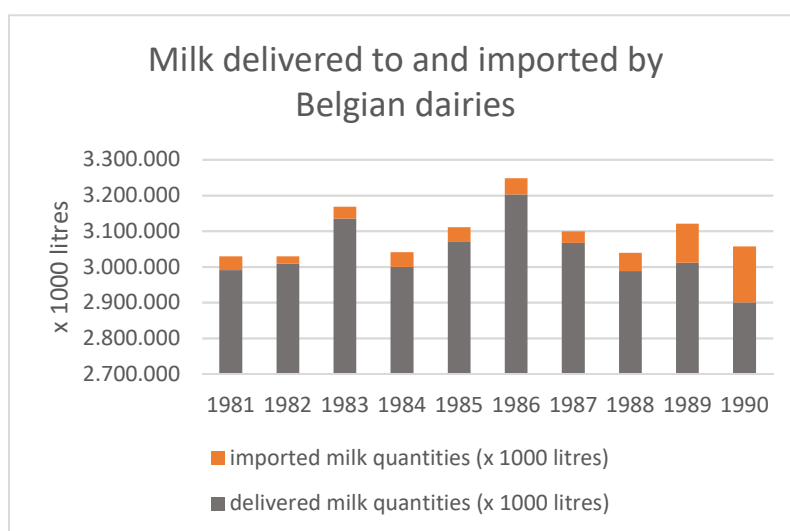


Figure 18 : Figures of milk delivered to and imported by Belgian dairies (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1988; 1987; 1990)

The milk quota went paired with a trend of rising milk prices paid to the farmers (Figure 19).

been disagreements between the main Flemish agricultural Union *Boerenbond* and the related *Algemeen Verbond van Cooperatieve Zuivelfabrieken* on one hand, and the main Walloon Union UPA and the *Union de l'Industrie Laitière Belge*, on the other hand, about the public support of the Belgian state towards the dairy industries, in the 70s. The plea to adopt a regionalized base to distribute the public aids was already made there.

⁴⁴ Interviews m3, p2; Archives Bernard Calicis, box « Coferme », typewritten report, manually annotated "extrait du PV (projet) du bureau ADR du 1er août 1988. Concerne la politique agricole laitière" ;

Challenges of collective agency in the Walloon dairy sector

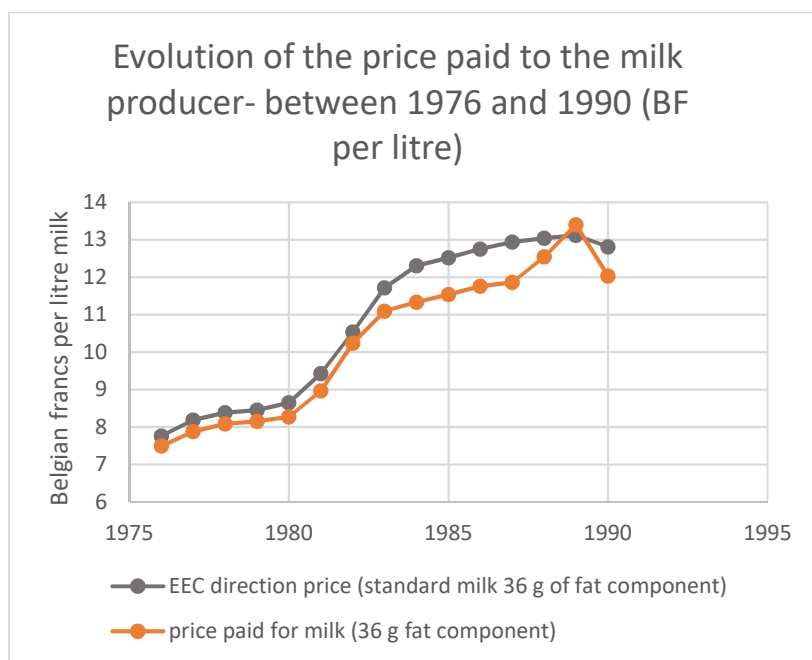


Figure 19 : Price paid in Belgium (expressed in Belgian francs - BF) to the milk producer between 1976 and 1990 (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1988; 1991)

On the markets of dairy products, competition was strong: markets were saturated and distribution channels were increasingly concentrated⁴⁵. Additionally, the decrease of the intervention stocks and the limitation of the EEC policy of restitutions on exportations made the dairies increasingly face the fluctuations of the world markets (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1988; 1987). At that time, the recourse to European investment aids was complicated as well, because the European landscape presented 15 to 20% of processing plants in surplus⁴⁶.

⁴⁵ Interview m3 ; Archives Bernard Calicis, box "Sofrem", Activity report of Sofrem of 1988 ; box "Coferme", Elements pour l'élaboration d'une politique de développement de l'activité agro-alimentaire en Entre-Sambre-et-Meuse, annoté à la main « Document de travail ADR », 2 juin 1989

⁴⁶ Archives Bernard Calicis, file S66, Note sur le problème laitier – letter to Clément Crohain, 28 juillet 1988 ; box "Coferme", Elements pour l'élaboration d'une politique de développement de l'activité agro-alimentaire en Entre-Sambre-et-Meuse, annoté à la main « Document de travail ADR », 2 juin 1989

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As soon as from 1984, the Walloon region ordered a study aimed at clarifying a strategy to “reinforce the Walloon agro food chains”, with an objective of merging all the Walloon dairies in a group of European scale⁴⁷. The study report stressed that the same structural factors affecting the profitability of intercooperatives in the 1960s and 1970s in the provinces Namur, Hainaut and Luxembourg (exposed in Table 2) still affected the merged cooperative Sud-Lait. In terms of products, the Walloon dairy (inter)cooperatives were not enough oriented towards productions with a high added value (Figure 20 and Figure 21).

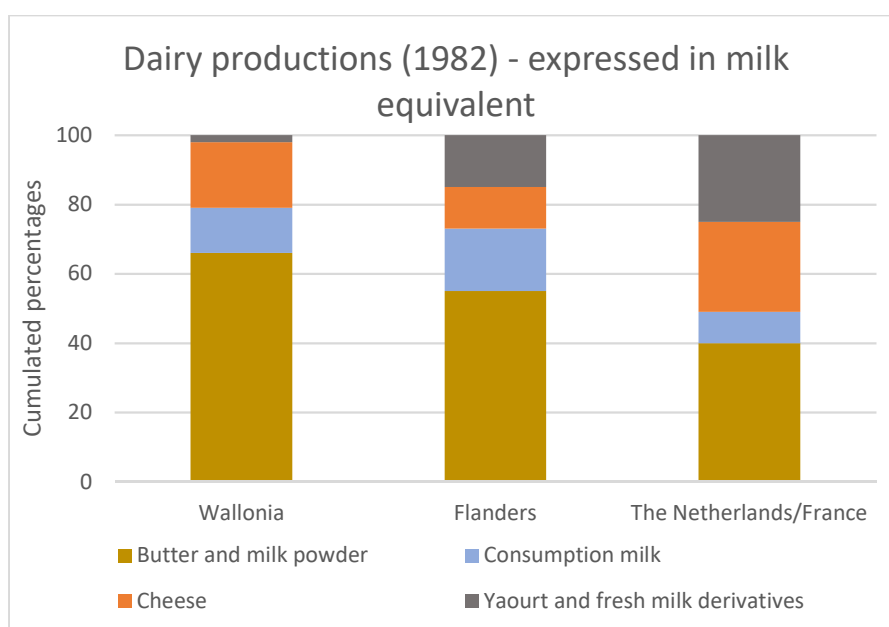


Figure 20 : Compared dairy productions in Wallonia, Flanders and the neighbouring countries (expressed in percentage of the milk produced, used for a given dairy production)⁴⁸

⁴⁷ Archives Bernard Calicis, file « Politique agricole CEE S20, subfile P17 », McKinsey & Company, *Renforcer les filières agro-alimentaires wallonnes. Rapport réalisé pour le Ministère de l'Economie Regionale Wallonne, 27 avril 1984*

⁴⁸ Id.

Challenges of collective agency in the Walloon dairy sector

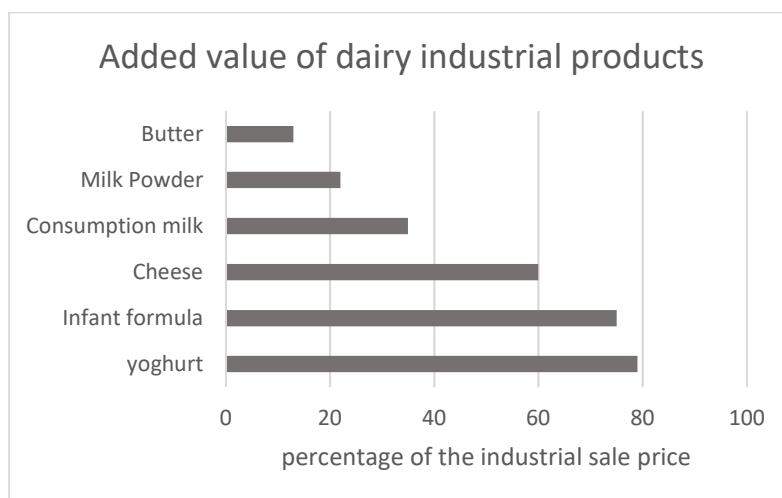


Figure 21 : Added value of the dairy productions⁴⁹

Quality productions of the Walloon Region, like butter, were not sold at a price corresponding to their level of quality⁵⁰. Concerning fresh derivatives from milk (yaourts, etc) and cheese, the production did not account for volumes high enough to match the requirements of the distribution channels.

As in the 70s, the level of indebtedness of dairies was problematic for their investment capabilities. The Walloon dairies did not manage to pay the dairy farmers as high as the dairies from the Flemish Region (2 to 5% less).

The authors of the report, based on the limited investment capacity of investment of Walloon dairy cooperatives, made a call for more cooperation, minimally under the form of a commercial coordination and a coordination of milk collection and of research and investment

⁴⁹ Id.

⁵⁰ The authors of the report McKinsey note that the Walloon butter has the level of quality equivalent to the Beurre de Normandie, but is still sold at a price inferior of 11%

strategies (Figure 22), and maximally through the integration of all dairies under a unique management structure (Figure 23).

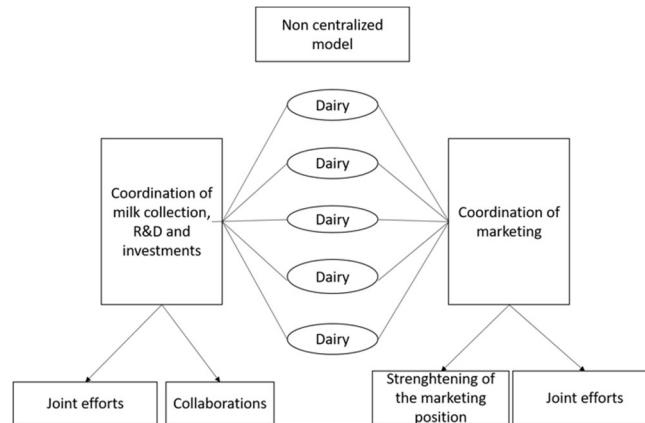


Figure 22 : Representation of the option of coordination of dairy cooperatives as proposed by McKinsey

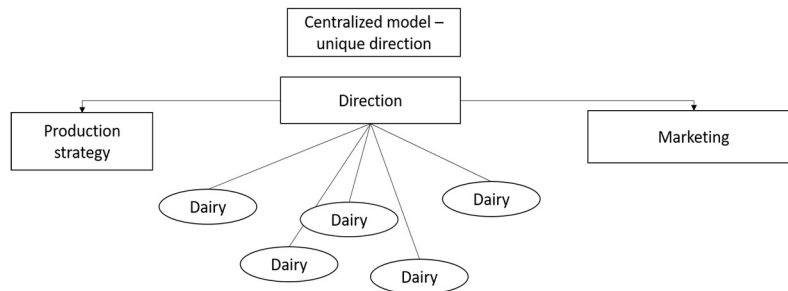


Figure 23 : Representation of the option of central management of all dairy cooperatives under one direction as proposed by McKinsey

The minutes of the meetings organised with the directors of dairy cooperatives to discuss the outcomes of this report⁵¹ show no agreements about an integration of all dairy cooperatives under a centralized management. Some smaller dairy cooperatives, especially the ones who remained independent from the *laiterie Sud-Lait* in the provinces of Luxembourg and Hainaut (*Chéoux* and *Coferme*), stressed that

⁵¹ Archives Bernard Calicis, file S206, Report of exchanges between dairy directors on the 14th of May and on the 26th of June 1984, typewritten document, McKinsey and Company, 1984

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integration did not fit with the interests of smaller dairy cooperatives focused on regional brand productions, because they need to be able to be flexible in their commercial strategy. However, the reactions during the meetings also stressed the limits of a simple coordination between dairy cooperatives, namely that a risk of lack of strategic coherence remained.

Anticipating the European single market of 1993 (Toute l'Europe 2020; CRISP 2020), and in front the observed evolution of concentration of dairies in the neighbouring countries⁵², the Walloon ministry of agriculture supported, as from 1988, a concrete plan of integration of all dairies. The executive feared that the big dairy groups in the making in the neighbouring countries would be very offensive in terms of milk collection and that the Walloon dairies would not be able to compete with them, as well in terms of milk collection as in terms of market strategy⁵³. The plan foresaw the merger of all cooperatives in a unique milk

⁵² Archives Confédération Belge des Laiteries BCZ, R.Debergh, *Ontwikkelingen in de zuivelindustrie. Europees – Belgisch – Cooperatief*. Algemeen Verbond der Cooperatieve Zuivelfabrieken, 1992.

⁵³ Archives de la Région wallonne, Chancellerie, file 200303 (2761). *Note à l'exécutif régional wallon*, by Guy Lutgen, Ministre de l'Agriculture, de l'Environnement et du Logement pour la Région wallonne et Bernard Anselme, Ministre-Président, chargé de l'Economie et des PME pour la Région wallonne, 27 Septembre 1990

Chapter 2 - Historical trajectories of the Walloon dairy cooperatives

collection cooperative, linked to a limited liability company in charge of the production and commercialization of products (Figure 24)⁵⁴.

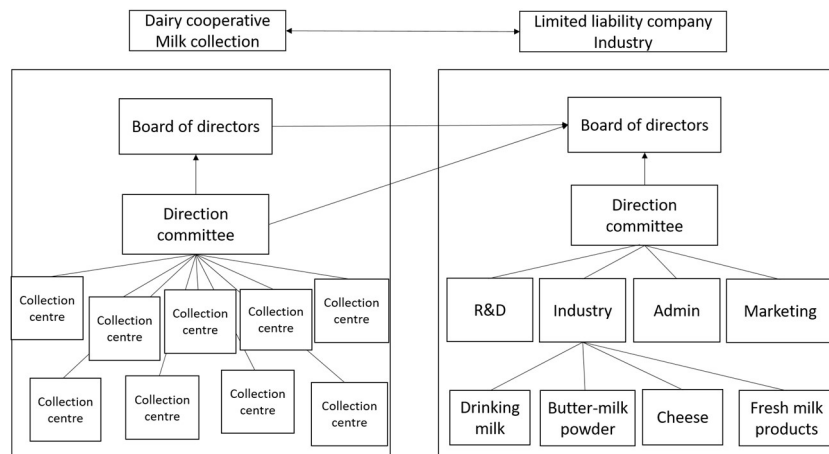


Figure 24 : Representation of the project of the Walloon Executive to merge all Walloon dairy cooperatives in one dairy group

With the exception of the cooperatives integrated to the intercooperative Interlait, no other cooperative finally joined the integration⁵⁵. The so-called “Group Interlait” collected a volume of 550 million liters milk, which is half of the volume produced in the Walloon region (Figure 25).

⁵⁴ Archives Bernard Calicis, File S 36 “Coferme – relations avec Sud-Lait”. Written report of the encounter of 30 August 1989 between the administrators of the dairy cooperative Sud-Lait and the administrators of the dairy cooperative Coferme – Gembloux - 19 July 1989. Typewritten document. The document includes a graphical presentation of the plan.

⁵⁵ Archives de la Region wallonne, id. Interview d3.

Challenges of collective agency in the Walloon dairy sector

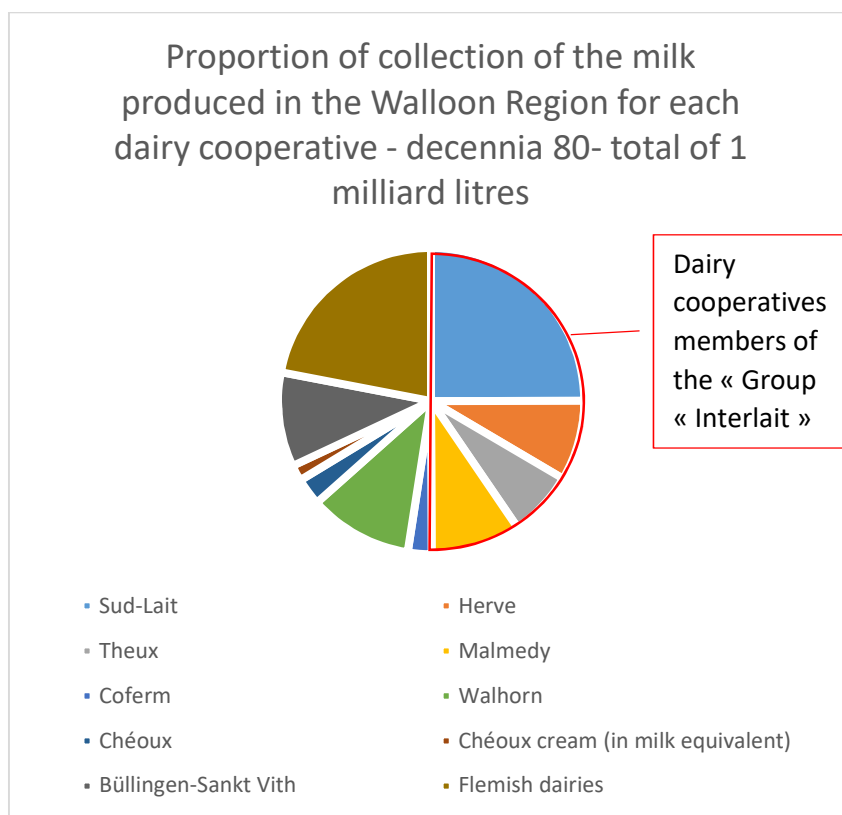


Figure 25 : Proportion of the milk collected by the different dairy cooperatives⁵⁶

Two smaller cooperatives from the province of Luxembourg (Chéoux) and Hainaut (Coferme) privileged coordination in terms of market opportunities⁵⁷ and one cooperative of the province of Liège

⁵⁶ Sources of the figures : Archives Bernard Calicis, file « Politique agricole CEE S20, subfile P17 », McKinsey & Company, *Renforcer les filières agro-alimentaires wallonnes. Rapport réalisé pour le Ministère de l'Economie Regionale Wallonne*, 27 avril 1984 ; *Le Sillon belge* 16 December 1977, page 7 « Le lait au plus offrant » ; *Le Sillon belge* 19 August 1988. « Assemblée générale de la laiterie coopérative de Chéoux » ; [Webpage Beurrerie de Bullange- Belgique – Histoire](http://www.bullinger-butterei.be/cms/index.php?article_id=3&clang=1), http://www.bullinger-butterei.be/cms/index.php?article_id=3&clang=1, consulted 24/10/2017

⁵⁷ Archives Bernard Calicis, File S239 « Laiterie coopérative de Cheoux », manuscrit report – Réunion Coferme concernant le prix du lait – Résumé de la rencontre entre Manu et P.Ska du 16 juillet 1988.

(Walhorn) refused the plan, allegedly because the new configuration did not foresee any position for the management team of the dairy⁵⁸.

In order to act as competitors on the European markets, the “Group Interlait” and one independent dairy cooperative of Walhorn (representing together 60% of the milk collected in the Walloon region and 78% of the milk processed by the Walloon dairy cooperatives (Figure 25)) sought external investors to modernize their production plants and/or diversify their production. Historical actors active in the direction of the dairy of Walhorn at the time mention a strong tension regarding the payment of milk to farmers, triggered by the competition for milk between dairies. This tension prevented the possibility to allocate resources for investments in the production plants⁵⁹. The project of the Group Interlait, directly inspired from the project of the Walloon Executive, is presented in Figure 26. It included an association with the private dairy company Corman s.a. situated in the province of Liège and with the French dairy group Besnier, and the transfer of the processing plants (of the intercooperative Interlait in the province of Liège and of the dairy cooperative Sud-Lait in the province of Luxembourg) into a limited liability company.

⁵⁸ Interview d3.

⁵⁹ Interviews d3, p2, u1, d1.

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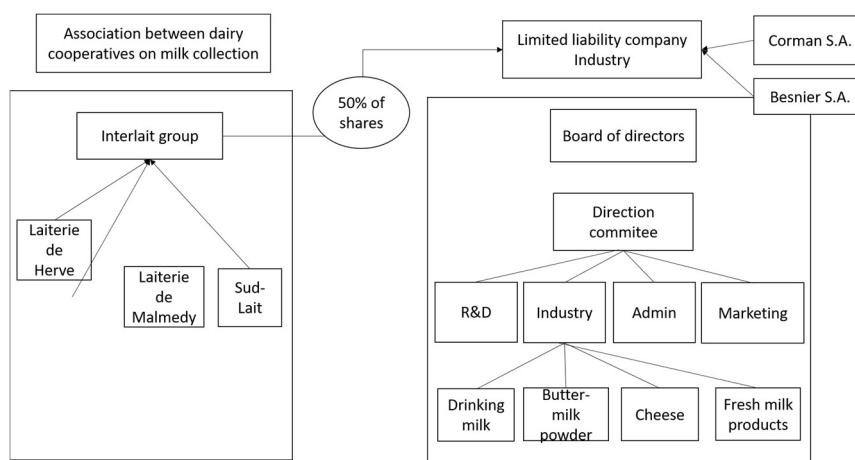


Figure 26 : Representation of the projects of the Group Interlait (1990).

The group Besnier was similarly negotiating with the dairy cooperative of Walhorn to take over 50% of the shares of its processing plant⁶⁰, which means that the group would have access to 78% of the milk produced in the Walloon Region. This sparked a competition between Besnier and the group *Union Laitière Normande* (UNL), two of the major French dairy groups (Figure 27) for the control of the Walloon dairy processing plants⁶¹.

⁶⁰ Interview d3.

⁶¹ Archives Confédération Belge des Laiteries, R.Debergh, *Ontwikkelingen in de zuivelindustrie. Europees – Belgisch – Cooperatief*. Algemeen Verbond der Cooperative Zuivelfabrieken, 1992 ; Archives de la Région wallonne, Chancellerie, file 200303 (2761). Note à l'exécutif régional wallon, by Guy Lutgen, Ministre de l'Agriculture, de l'Environnement et du Logement pour la Région wallonne et Bernard Anselme, Ministre-Président, chargé de l'Economie et des PME pour la Région wallonne, 27 Septembre 1990

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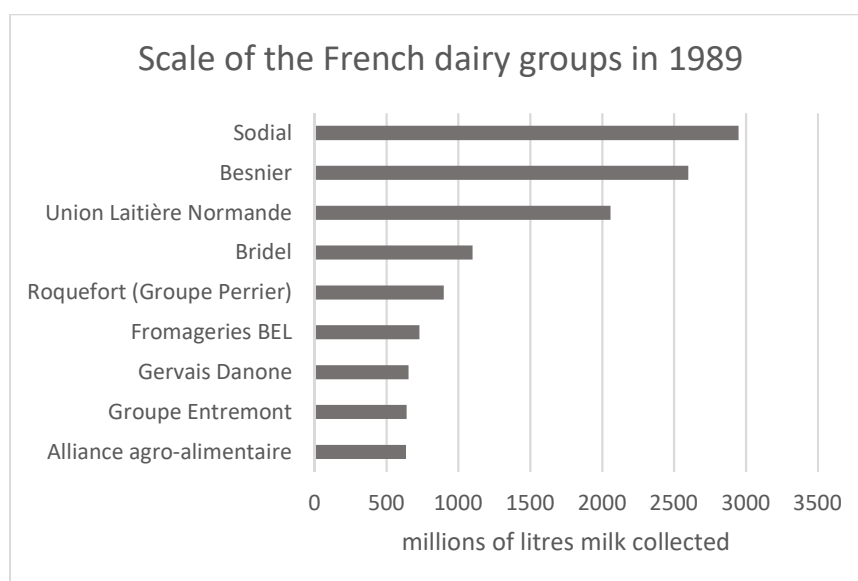


Figure 27 : Scale of the French dairy groups⁵⁵

Unexpectedly, the *Union Laitière Normande* took over the private dairy company Corman s.a. in July 1990⁶² and struck a deal with the Interlait Group. The UNL offered a package of conditions to the dairies of the group Interlait (in terms of guarantees of milk payment and use of the milk in the overtaken tools) in exchange of the session of 74% of their production plants and their brands. The *Union Laitière Normande* ceded right away the milk processing plant in the province of Luxembourg to a belgo-luxemburgian public consortium⁶³. At the same time, the group Besnier took over 51% the processing plant of the dairy cooperative of

⁶² Archives Confédération Belge des Laiteries, Id. ; *Le Soir*, 21 août 1990 « Corman : la Citibank rappelée à l'ordre », retrievable as electronic archive http://www.lesoir.be/archive/recup/%25252Fcorman_t-19900821-Z0308N.html

⁶³ *Le Soir* 21 septembre 1990, M.Vanesse, « Montée de lait en Wallonie, Sud-Lait bat le beurre », retrievable as electronic archive : http://www.lesoir.be/archive/recup/%25252Fmontee-de-lait-en-wallonie-a-reconge-sud-lait-bat-le-be_t-19900921-Z033UE.html ; Archives de la Région wallonne, Chancellerie, file 200303 (2761). Note à l'exécutif régional wallon, by Guy Lutgen, Ministre de l'Agriculture, de l'Environnement et du Logement pour la Région wallonne et Bernard Anselme, Ministre-Président, chargé de l'Economie et des PME pour la Région wallonne, 27 Septembre 1990

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Walhorn⁶⁴. The Walloon dairy cooperatives acted mainly, from there, as dairy cooperatives of milk collection only.

At the same time, the smaller dairy cooperatives Chéoux and Coferme explored a model of cooperation that included selling their milk as raw material on the European market and taking participations in milk processing structures⁶⁵. The Cooperative of Büllingen-Sankt-Vith (see Figure 25) made the decision to focus on niche markets on the base of protected designation of origin for butter and was ultimately privatized⁶⁶.

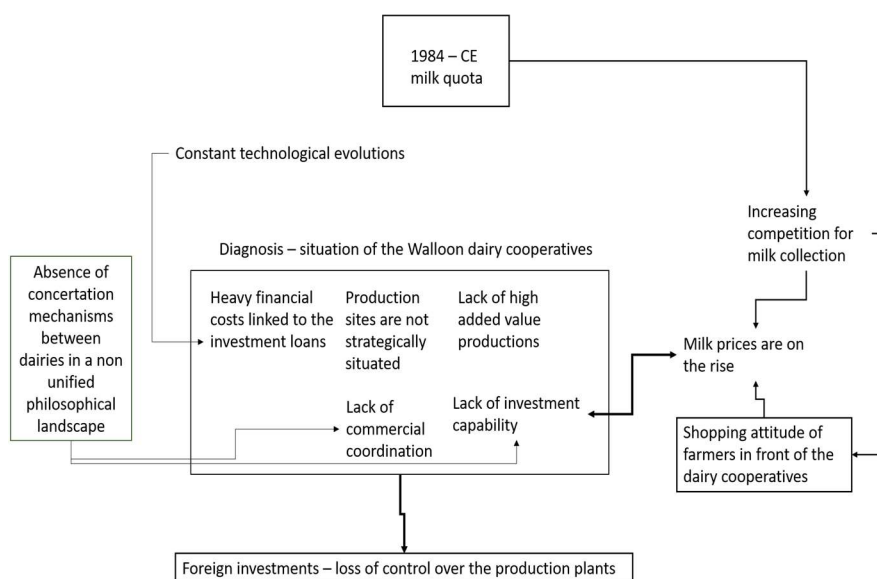


Figure 28 : Graphical summary of the mechanisms having led to the loss of control over the milk processing plants of the wallon (inter)cooperative dairies at the eve of the 90s

⁶⁴ Interview d3

⁶⁵ Interviews d2, d6

⁶⁶ Webpage *Beurrerie de Bullange- Belgique – Histoire*, http://www.bullinger-butterei.be/cms/index.php?article_id=3&clang=1, consulted 24/10/2017

1.5. The progressive increase of the milk quota defines new cooperative strategies in the decennia 2000

The change of conjuncture on the milk market at the beginning of the decennia 2000 changed the relation between the Walloon cooperative dairies and the investors in their processing plants. In the frame of the CAP reform of 2003, milk quotas increased annually⁶⁷. This led to a decrease of the tension in terms of milk collection for the dairies in Europe, with a surge of the European dairy production of 7 milliard litres between 2005 and 2014 (Confédération belge de l'Industrie Laitière 2016). The French groups that had invested in the Walloon milk processing plants reacted either, by closing the Walloon processing plants in which they had made no major investments, or by limiting the amount of milk that they accepted from the Walloon milk collection cooperatives⁶⁸. For the cooperatives selling milk as raw material on the markets, the situation became complicated as well⁶⁹. We then see three strategies emerge for the dairy cooperatives, leading to the present situation of milk production in the Walloon region:

- join a cooperative of European scale that is in control of its own processing plant. → strategy ultimately chosen by the dairy cooperative of Walhorn, which joined the cooperative Arla in 2014⁷⁰; the group

⁶⁷ The CAP Reform from 2003 foresaw annual increases of the milk quota of 0,5% as from 2006 and of 2% as from 2008.

⁶⁸ Interviews d5, d3 ; *La Dernière Heure*, 26 April 2001 « Interlac (178 emplois) : menace de fermeture », consulted on 22 June 2017, <http://www.dhnet.be/archive/interlac178emploismenacedefermeture51b86ee3e4b0de6db9a53b27>

⁶⁹ Archives Jean Pirlot, File « Coferme », Report of the board of directors for 2005, typewritten document dated 15 June 2005.

⁷⁰ Interview d3 ; Vedia, Lontzen : projet de fusion entre la cooperative de Walhorn et Arla Foods, https://www.vedia.be/www/accueil-lontzen-projet-de-fusion-entre-la-cooperative-de-walhorn-et-arla-foods_vvi_83684.html, consulted on 28 May 2018

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Besnier (that became Lactalis in 1999 (Groupe Lactalis 2016)) that owned the processing plant it had overtaken from the dairy cooperative of Walhorn, kept collecting milk for that processing plant through the dairy cooperative Socabel ;

- merge and buy the only remaining processing plant present on the Walloon territory (the consumption milk, milk powder and butter processing plant present in the province of Luxemburg, owned by a belgo-luxemburgian public consortium). → the former dairy cooperatives of the Group Interlait, merged under the name LAC+, associated with the former dairy cooperative of Chéoux, bought the milk processing plant in 2001 and finally merged into one sole dairy cooperative in 2010, the *Laiterie des Ardennes*⁷¹;

- remain small-scale and act on multiple channels, from selling milk on the markets to providing milk to small-scale transformers (the cooperative Coferme in the province of Hainaut).

1.6. Determining influences and interplay with the course of history

This historical overview brings insights on the chronological pathway that led to the present situation of milk processing in the Walloon region.

In this historical trajectory, the tension in terms of milk collection appears as a constant until the decennia 2000. We can link this tension to the relative shortage of milk on the markets induced by the EEC policies, and to the competition between dairies to ensure their milk collection. The growing pressure to implement efficient commercial strategies in front of a strong market competition and a concentrated distribution

⁷¹ <https://www.solarec.be/solarec-internet-fr/presentation/historique/historique-de-lentreprise/historique-1069.aspx> ; Moniteur belge, du 4 juillet 2011 – dépôt au greffe du 21 juin 2011

sectors also appears as a constant, than gains importance throughout the decennia. Finally, the constant pressure on investments to follow the pace of technological advances and the related costs also appears as a constant.

The economic difficulties that arised for Walloon dairy (inter)cooperatives, linked to these constants, did not affect the dairy (inter)cooperatives of the province Liège in the 70s. We can relate this, minimally, to the fact that this province did not present the structural factors (herd density, herd productivity) that affected the milk collection costs of the dairies of the other provinces. In the 80s, however, the impact of the milk quota on the milk collection, the importance market competition and the inability of the dairy cooperatives to face investments concerned all the dairy cooperatives of the Walloon region. Notably, as well in the 70s as in the 80s, the inability to reach an agreement in terms of cooperation between cooperative dairies seems to have played a part in the absence of a solution that would create no future vulnerabilities for the sector. Ultimately, this absence of cooperation did not put the dairy cooperatives in a situation of strength in front of investors at the eve of the opening of markets in 1992. At the time, the dairy cooperatives lost control over their processing plants and brands. The chronic sub-investment in the processing plants by the external investors led to a situation where two options remained during the decennia 2000. At that time, the progressive increase of the milk quota changed the features of the market of milk collection. As the quantity of milk on the markets was rising, the Walloon dairy cooperatives who were delivering milk to others were less likely to be in a position of strength. This enlightens the options taken at the time : 1) to reinvest, in the decennia 2000, in one of the production plant left, that is the milk powder and butter production tool still active today 2) to merge into a milk cooperative at European scale, that has the scale to invest in its own tools and develop a powerful commercial strategy 3) to remain small-scale and act on multiple

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channels, from selling milk on the markets to providing milk to small-scale transformers.

The current landscape of the Walloon dairy sector and its current patterns of productions hence appear to be the result of a complex historical dynamic. This dynamic unfolded under the influence of context-specific cultural factors influencing the interaction among dairy cooperatives in consolidation processes, which the second section of the chapter discusses in detail.

2. PAPER - Lock-ins as emergent property of agents-structure interactions: insights from the historical pathways of the Walloon dairy cooperatives

Paper draft (under review). Besides the supervisors, this paper has been written in cooperation with Yves Segers.

Abstract:

This historical study of the trajectories of Walloon dairy cooperatives, reveals how lock-ins to transition pathways emerge from the interplay between the governance structure of dairy cooperatives and the individual agency of farmers. Against a background of milk scarcity and structural difficulties linked to the features of milk production within the region, the pre-eminence of the interests of the farmer-member as milk supplier over that of principal investor, constituted a structural driver of the competition between dairy cooperatives and the subsequent inability to cooperate and invest towards successful long-term diversification pathways. On the basis of a crossover between the *Multi-Level Perspective* and Williamson's framework from *New Institutional Economics*, we analyse how this fundamental issue surrounding the dual role of farmers, ties with the profitability of the industrial model and how it generates adverse effects pushing the dairy cooperatives towards a lack of trust and cooperation. Unfavourable economic contexts and politically divided landscapes aggravate this tension. Conversely, institutional support might mitigate these effects. Developing cooperation towards transition requires approaching lock-ins as a contextualized conjunction of factors acting at different levels and emerging, in particular, from the agent-structure interplay. This study stresses the relevance of studying agricultural cooperatives from the angle of this agent-structure interplay

and confirms the relevance of considering transition processes from a micro-level and long-term perspective as a way to uncover the (in)ability of collective agents to act along a given macro-scale transition path.

Keywords: collective agency; trust and cooperation; transition; consolidation; analytically structured history.

2.1. Introduction

Building on a case study of the historical pathways of the Walloon dairy cooperatives, this paper explores how dairy cooperatives, as structure of collective agency, may be hindered in their trajectories of transition by lock-ins emerging from the interplay between their governance structure and the individual agency of farmers. By unravelling how this interplay takes place and what its implications are, we intend to bring meaningful insights on the approach of lock-ins in transition processes.

As is the case for food systems in general (Markard, Raven, and Truffer 2012), the dairy value chain faces critical issues in its transition towards sustainability (Steinfeld et al. 2006; European Milk Board 2017b; Greenpeace 2019). Milk processing is mainly organized through dairy cooperatives (Bijman et al. 2012; Copa-Cogeca 2015) which act as structures of collective agency, where choices are made regarding strategy, allocation of resources and the redistribution of the added value (Grashuis and Cook 2017; Reviron and Python 2018). Hence, attention to the particular challenges faced by these organisations in transition processes is required (van Bers et al. 2019; Ajates 2020).

Dairy cooperatives may respond to the above-mentioned sustainability challenges by elaborating new supporting roles towards farmers with diverse environmental-friendly practices (Herrera-Reyes, Carmenado, and Martínez-Almela 2018; Vytautas Magnus University et

al. 2019; Swagemakers et al. 2019; Runhaar et al. 2020). In some cases, the transition towards more sustainable practices ties in with the exploration of higher added value agri-food marketing pathways (Swagemakers et al. 2019; Runhaar et al. 2020; Pachoud et al. 2020). However, agri-food cooperatives, as structure of collective agency, may be hindered in their transitional path towards sustainable farming practices and/or higher added value products by lock-ins emerging from the interplay between their governance structure and the individual agency of farmers (Borgen 2011; López-Bayón et al. 2018; Sánchez Navarro, Arcas Lario, and Hernández Espallardo 2019; De Herde, Baret, and Maréchal 2020). We see lock-ins from an evolutionary perspective, as the factor or combination of factors which may impede agents to explore given pathways of development due to the deep-rooted rules or habits which exist, as well as patterns of practice and behaviour (Maréchal 2012; Sutherland et al. 2012; Pesch 2015). In the case of agri-food cooperatives, these lock-ins stem from the structural features of farmer-membership, favourable to what Cook and Iliopoulos (2000) call “opportunistic behaviour”: as a consequence of the status of the farmer as residual claimant and of the statutory rules of equal remuneration, farmers may tend to favour their own short-term remuneration goals over the long-term development of the dairy cooperative (Cook and Iliopoulos 2000; Chaddad and Cook 2004).

Beyond adaptations to the statutory rules and the development of new types of contractual relationships with the farmers (Chaddad and Cook 2004; Borgen 2011; Grashuis and Cook 2017), several key dimensions have been identified as factors likely to increase a farmer’s commitment to the cooperative and reduce the likelihood of opportunistic behaviour (Wynne-Jones 2017; Apparao, Garnevska, and Shadbolt 2019). These dimensions are often considered in terms of social capital, which is a heterogeneous set of features “such as norms, values, trust, networks and communication” favouring the farmers’ commitment to cooperatives

(Apparao, Garnevska, and Shadbolt 2019). Many studies focus on the resources that individuals or collectives may extract out of a network for business optimization (Ismaili, Raggi, and Viaggi 2009; Rodrigo-Alarcón, Parra-Requena, and García-Villaverde 2014; McKitterick et al. 2016; Ruiz-Ortega et al. 2017; Yang, Vernoooy, and Leeuwis 2018; García-Villaverde et al. 2018; Rodrigo-Alarcón et al. 2018; Olawuyi and Mushunje 2019; Fait et al. 2019). Other studies consider the regional and local background features of social connectedness which supposedly favour trust, and in turn commitment and cooperation (Chloupkova, Svendsen, and Svendsen 2003; Bertolini and Giovannetti 2006; Bojar and Drelichowski 2008; Crespo, Réquier-Desjardins, and Vicente 2014; Vecchio et al. 2020). Ultimately, some studies consider which conditions may support a shared understanding about goals and an inclusive participation in a cooperative project (Saint Ville, Hickey, and Phillip 2017; Ramirez et al. 2018; Gallego Bono and Tapia Baranda 2019). Indeed, farmer's commitment to collective agency may tie in with emotional dimensions, such as the need to belong to a group of peers (Wynne-Jones 2017; Apparao, Garnevska, and Shadbolt 2019) and interacting in confidence that collective action can be sustainable and beneficial (Chlebicka, Falkowski, and Lopaciuk-Gonczaryk 2017).

Regardless of the importance of social capital, the roots of cooperation often stem from a complex and contextualised combination of institutional and political features which support collective action (O'Rourke 2007; Henriksen, Hviid, and Sharp 2012; McLaughlin and Sharp 2015; Henriksen, McLaughlin, and Sharp 2015; Apparao, Garnevska, and Shadbolt 2019). For instance, an often overlooked dimension of approach of a farmer's commitment to cooperatives is in how the cooperative's strategies in a given market context build upon and contribute to feedback positively on the farmer's commitment (Henriksen, McLaughlin, and Sharp 2015; Martino 2017). The focus on social connectedness and particularly the element of trust, often infers

that farmers may engage in exchanges within a cooperative because they appreciate the value of such an exchange for themselves, and that trust favours this appreciation (Chloupkova, Svendsen, and Svendsen 2003; Wynne-Jones 2017). However, trust in a group of farmers may go hand in hand with an individual behaviour adverse to cooperation (Garrido 2014).

Our aim is to develop a deeper understanding of how the farmers' commitment to cooperative action interplays with the cooperative structure, and with the way the cooperative structure is steered strategically in a given context. We consider to what extent the farmers' commitment to cooperation may be affected by a more complex set of dimensions, other than those relating to social capital, which we have previously mentioned. We focus in particular on how farmers' commitment and cooperative structure interplay and mutually influence each other on long-term development pathways. This question is of particular relevance for future pathways of development, as the strategic performance and the governance of cooperative forms are intertwined (Jolink and Niesten 2012), and cover more than just an economic dimension (Apparao, Garnevaska, and Shadbolt 2019; Ajates 2020). Understanding how cooperatives, as a structure of collective agency, may be influenced in its pathways by the interplay between its own structure and the individual agency of farmers, and in turn influence their commitment to the cooperative project, is hence of relevance when considering their future pathways.

2.2. The added value of a historical epistemology

A historical approach of organisational issues may meaningfully answer the concern over understanding the unfolding dynamic between the individual agency of the farmer and the governance of collective action in the cooperative structure. Indeed, a historical approach gives use the benefit of considering how actors may experience the evolution of an

organization over a long time span (Maclean, Harvey, and Clegg 2016). This approach, not only brings “realism and substance” (Maclean, Harvey, and Clegg 2016, p.4) to the study of certain topics, it also offers opportunities for considering the influence of time and space on the applicability of generic explanatory frames (Clark and Rowlinson 2004).

Organisations do not develop in a vacuum, nor does the way farmers interact with their cooperatives. The current state of an organization may be the result of a more complex combination of drivers than individual or collective economic optimization alone, acting on the organisation’s long-term trajectories (Hansmann 1996; Schneiberg, King, and Smith 2008; Ménard 2017; Apparao, Garnevska, and Shadbolt 2019). The historical epistemology may, in this regard, offer the added value of a source-based narrative that unravels the importance of the drivers that influence the organisations’ strategies. In contrast with studies on the present-day strategies of organisations, a historical analysis considers how time and context have influence over organisations (Lippmann and Aldrich 2014).

Our research fits well into the recent expanding historiography of food systems relying on interdisciplinary approaches to consider the interplay between individuals, organisations and the impact of the broader cultural and political framework in evolving food systems (Scholliers 2007; Brassley 2009; Segers, Bieleman, and Buyst 2009). This interdisciplinary approach is described as *analytically structured history* (Clark and Rowlinson 2004; Rowlinson, Hassard, and Decker 2014; Lippmann and Aldrich 2014; Leblebici 2014; Maclean, Harvey, and Clegg 2016). It combines two epistemological approaches and traditions. On the one hand, the micro-scale historical narrative is grounded in primary sources and brings any presuppositions through the “test for authenticity” brought by evidence emerging from source analysis (Maclean, Harvey, and Clegg 2016, p.16 citing Elton 2002). On the other hand, the confrontation of the historical investigation to theoretical frames used in specific disciplines (mainly from sociology, political science or economics)

provides a new lens in which to construct the historical narrative, connect it to present and prospective issues, and favour the connection between the micro-history and discussion on conceptual meta-narratives (Maclean, Harvey, and Clegg 2016). Such an approach may provide potentially meaningful insights related to the research question: how the long-term interaction between farmers and farmers' cooperative has influenced the latter's strategies, beyond any dimension of social capital, or rationale of economic optimization.

2.3. The case of the Walloon dairy cooperatives

An analysis of the long-term interactions between farmers and the farmers' cooperative regarding the latter's definition of strategies, is of particular relevance when we consider the case of the dairy cooperatives of the Walloon Region. The Walloon Region is the southern part of Belgium and covers over about 17000 square kilometres. Current milk collection in the Walloon Region is based on five dairy cooperatives which collect 97% of the milk produced. Following a wider European trend, four of these cooperatives have gone through consolidation processes over the last 30 years in an effort to face the globalization of markets and the increased concentration of the distribution sector (Filippi, Frey, and Mauget 2008; Juliá-Igual, Meliá-Martí, and García-Martinez 2012). This includes upscaling and mergers, which in two cases involved a multinational dairy cooperative and the partial or total cession of processing tools to a multinational dairy group (Chaddad and Cook 2004; Mauget 2008; Filippi, Frey, and Mauget 2008).

Of particular relevance for the Walloon Region, is the possible diversification of products away from UHT (ultra-high temperature processed) consumption milk, milk powder and butter – at present 80% of the dairy products of the region (based on the figures from Maquet (2012)) - towards a larger variety of dairy products. We understand diversification, the term usually used in agri-food studies, as the extension

of the range of commodities produced, in particular by evolving towards more highly valued products (FAO 2004; Memedovic and Shepherd 2009; Stefan and Imre 2018; Heck et al. 2020). The profile of dairy production within the region does indeed appear less diversified than at the Belgian level or in neighbouring countries, regardless of the diversity of the consolidation trajectories in these countries (IFCN 2014; Statbel 2017; CNIEL 2020a). Furthermore, it is important to know that the region holds a diversity of dairy farm models, from intensive maize and grass silage based production to extensive pasture-based models (Petel, Antier, and Baret 2019; Lebacqz 2015). A variety of milk processing models may act upon and further support this diversity of farm models (Touzard and Fournier 2014; Perrot et al. 2017; Reviron and Python 2018; De Herde, Maréchal, and Baret 2019).

The important question that follows is why this diversification did not occur earlier, and which drivers led to the present configuration of dairy production within the region. As a starting hypothesis, we think that drivers other than individual and collective economic optimization may have taken place in the development of Walloon dairy cooperatives, as well as in the interaction between the farmers and the dairy cooperatives. The purpose of this historical investigation is precisely to uncover and analyse these drivers. To this end, following a historical epistemology, we conducted a search of all relevant sources (archives of dairy cooperatives, of public authorities) that could shed light on these aspects (Lippmann and Aldrich 2014).

Identifying the primary sources relating to the evolution of the Walloon dairy cooperatives was a challenge, considering that the field of historical study on food processing is underdeveloped in the Walloon Region (Vanhaute and Van Molle 2006; Matthys and Lefebvre 2006). A close-reading of the main agricultural journal (*Les éditions rurales* 1964) and contemporary publications (Saldari 1978; De Baere 1973) allowed us to identify all accessible archival funds related to the evolution of the

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Walloon dairy cooperatives : governmental sources at national and regional level and archives of former dairy directors. The latter not only contained material related to the dairy cooperatives to which the directors were associated, but also numerous reports of exchanges between dairy directors, the agricultural unions, covering a period dating from the sixties to the nineties. The insights from these sources was complemented by a series of published sources (Union de l'industrie laitière belge 1962; 1966; 1970b; Verkinderen and Ackerman 1964; Ackerman 1966; 1971; Algemeen Verbond der Coöperatieve Zuivelfabrieken 1974; Van Hecke 1976; Institut National de Statistique 1976; Office National du Lait 1977; Debergh 1992).

Additionally, 15 interviews with key-persons active in the dairy and agricultural sector, from the seventies until the nineties, were also conducted, in October and November 2017:

- Three officials from the Ministry of Agriculture (m1-m3);
- Two persons active in the direction of the farmers' unions at regional level (u1) and in the western part of the Region (u2);
- Two farmers and chairpersons of the administrative board of dairy cooperatives in the central and eastern part of the Region (p1 and p2) ;
- Six former directors of dairy cooperatives from the eastern (d1, d3, d5) central (d6) and western (d2, d4) parts of the Region ;
- One former director and owner of an investor-owned dairy situated in the central part of the Region (d7);
- One member of the board of directors of one of the dairy cooperatives situated in the eastern part of the Region (a1).

The diversity of historical sources (public and private archives, oral sources from various stakeholders in the dairy sector, published sources) and of documents (official reports, minutes of meetings, correspondence

between actors, retrospective oral accounts) allowed us to unravel and analyse the historical evolution of the Walloon dairy cooperatives from a variety of perspectives. This enriched the historical narrative (De Herde 2020) by bringing contrasts into the approach of issues.

This paper discusses how the interactions between the Walloon dairy cooperatives and their farmer-members structurally contributed to the orientation of the trajectories of the dairy cooperatives. The paper identifies patterns of path dependency as an emergent property of these agent-structure interactions, which are of relevance for the future development of dairy cooperatives. Section 4 describes the interpretative frame mobilized to uncover these dynamics. Sections 5 and 6 expose the main results drawn from the historical analysis of the Walloon dairy cooperatives, while section 7 discusses their significance for the development of cooperative models and their trajectories in evolving landscapes.

2.4. Interpretative frame

The study of the processes which took place within the Walloon dairy cooperatives over a lengthy period, as well as the ongoing interaction between the cooperatives and the farmers-members, favoured the utilisation of an interpretative framework that would meaningfully connect the processes uncovered with their significance in terms of trajectories and macro-scale pathways of transition (Lippmann and Aldrich 2014). To this end, the paper combines the *Multi-Level Perspective* with developments of the New Institutional Economics (Williamson 2000; 1998).

In the last 20 years, the *Multi-Level Perspective* (MLP) has played an outstanding role as interpretative theoretical frame of transition processes (Markard, Raven, and Truffer 2012; Lachman 2013). The MLP offers a “diachronic and systemic focus” (Bui et al. 2016, p.93 referring to

Diaz et al. 2013) adapted to give insights on “a big picture understanding of longitudinal (...) transition processes” (Geels 2020, p.2). The framework also accounts for the stability of an existing socio-technical regime, namely the sets of practices and rules that “guide and orient activities” (Geels and Kemp 2007; Geels 2010). Path dependency and lock-ins are concepts mobilized within this framework in order to account for the fact that the dominant routines in production, knowledge transmission and practices of the socio-technical regime, orient trajectories and hinder pathways of development (Unruh 2000; Geels 2004; Vanloqueren and Baret 2009; Maréchal 2012; Lachman 2013). Path dependency may be the outcome of development trajectories driven by agents within a given socio-technical regime, and may result in “adaptation-constrained spaces” displaying irreversible lock-ins (Gajjar, Singh, and Deshpande 2019). In particular, the level of collective action, and the interplay between collective structure and individual agency are stressed as an adequate level of analysis to consider the (in)ability to adapt and transform over time (Paschen and Ison 2014; van Bers et al. 2019).

This is of particular significance regarding dairy cooperatives and their interactions with the farmers-members. On the one hand, the dairy cooperatives are a legally framed structure gathering individual agents, the farmers - members of the cooperative, around a series of shared goals (Grandori 2017; Chlebicka, Falkowski, and Lopaciuk-Gonczaryk 2017) ; on the other hand, they are an agent acting on the markets with the requirement of economic profitability (Hansmann 1996; Schneiberg, King, and Smith 2008). The latter means that the pathways of evolution are under the influence of the strategic choices made by the members of the cooperative in terms of resource allocation and investments (Burgelman 2002). The former means that the governance process within the cooperative may influence these choices (Cook and Iliopoulos 2000).

In this regard, Williamson’s framework of analysis of the allocation of resources by firms (represented in Figure 29) presents a double advantage.

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Firstly, it accounts for the micro-level of analysis which is necessary to consider the agency of cooperatives and the interaction with its farmers-members. Secondly, it approaches the embeddedness of the cooperative's governance and strategic decisions within a wider context. According to this framework, firms allocate their resources (level 4) because their choices are embedded within and determined by the governance structure (level 3) they adopted. The way this governance structure determines how some strategic choices are more efficient than others, and which governance structure will achieve the given strategic goals, depends on the regulatory framework at hand (level 2), and on the effect of the broader cultural norms and customs (level 1). As an analytical tool, this framework may give interesting insights into the drivers that have influenced the pathways of development of dairy cooperatives, as it includes considerations on governance, and hence the relationship between the members and the cooperative. In the field of historical study, several authors have used it in order to evaluate the complexity of issues surrounding the market failure or success of dairy cooperatives in various European countries (Henriksen, Hviid, and Sharp 2012; McLaughlin and Sharp 2015; Henriksen, McLaughlin, and Sharp 2015). In this paper, we propose implementing this framework as an analytical tool to uncover path dependency and lock-in effects in the evolution of the dairy cooperatives, linked to its properties of structure of collective agency.

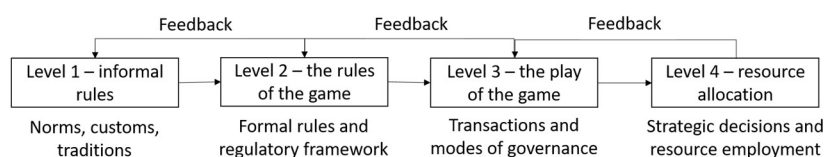


Figure 29 : Representation of the four levels of analysis of resource allocation in firms (Williamson 2000)

2.5. Chronological overview of the evolution of the Walloon dairy cooperatives

The current situation of the Walloon dairy cooperatives is the result of a consolidation process (defined, drawing on Shields (2010), as the shift to fewer and larger firms). This consolidation took place in a landscape of technological advances in milk processing equipment (automation and increased capacity) and within the context of an evolving European Common Agricultural Policy (De Baere 1973).

From 1945 onwards, the numerous dairies active within the territory of the Walloon Region (about 68 between 1945 and 1965) went through various phases of consolidation. Between 1945 and 1980, most investor-owned dairies ceased production or became absorbed into the consolidation processes of the dairy cooperatives (Union de l'industrie laitière belge 1962; 1966; 1970b; Office National du Lait 1977). Milk still collected by investor-owned dairies in the Walloon region was insignificant in the 1980s (McKinsey & Company 1984b).

From the 1940s to the 1960s, the processes of consolidation followed the technological evolution of milk processing and aimed at bundling resources for investments. The upscaling of the production tools was considered as inevitable (Union de l'industrie laitière belge 1965), given the fact that:

- The recourse to workforces remains high despite technological evolution;
- The margins between the price paid to farmers and the price at factory gate were narrow.

As from the 1970s, the motivation for consolidation is expressed not only in terms of cost optimization and investment, but also to gain competitive and negotiation power on the markets of products in front of increasingly concentrated competitors and distributors (Union de

l'industrie laitière belge 1970a; Algemeen Verbond der Coöperatieve Zuivelfabrieken 1974; Champagne 1981; McKinsey & Company 1984b; Calicis 1988).

The different phases of consolidation took place in an evolving European Economic Community Common Agricultural Policy (EEC CAP) framework. That framework influenced the context in which the dairy cooperatives evolved and made their strategic choices of investment. As the European Community set up intervention measures on milk powder and butter as from 1964, (De Baere 1973), the investments made by the dairy cooperatives at the time oriented the production of the region towards milk powder (+ 314% between 1964 and 1968) and butter (+ 40% between 1964 and 1968) (Union de l'industrie laitière belge 1966; 1970b). Soon after, the Mansholt plan was set up in 1968 at European level to curb dairy overproduction. The plan included incentives to convert the herds for meat production and on-farm use of milk (milk used to feed other animals, or directly processed into end-products on-farm) (Ledent and Burny 2002). These measures had success in the western and central parts of the Walloon Region that hosted mixed herds and had, until 1965, a high percentage of on-farm milk use (more than 75% in the western and central parts of the region) (Ackerman 1966; De Baere 1973). The subsequent decrease in milk delivery affected the profit margins of investments calibrated for a given quantity of milk, in a context of rising production costs due to increasing oil prices (interviews p1, d2) (Union de l'industrie laitière belge 1970a; Calicis 1973). Additionally, the low herd aspect (mixed breeds, low herd density) made milk collection more costly (Ministère de l'agriculture 1975b). Milk and cream collection areas overlapped, and no cooperation took place to optimize milk collection. The competition on the market of milk consumption and butter was strong. The dairy cooperatives faced heavy financial charges linked to their investments (Calicis 1973). Dairy cooperatives in economic difficulty, all situated in the western and central

part of the Region, unsuccessfully attempted to coordinate production and milk collection (Ministère de l'agriculture and Secrétaire d'état à l'économie régionale wallonne 1973; Fernand Lanotte 1975; Ministère de l'agriculture 1975b). The ministry of agriculture later steered the merging of these cooperatives into a single cooperative in 1975. Its activities were centralized in one milk processing plant producing milk powder, butter and consumption milk (Annexe au Moniteur belge 1975; Ministère de l'agriculture 1975b).

In the 1980s, a report written for the regional ministry of agriculture identified that structural vulnerabilities (low herd density leading to costly milk collection) were still present in most parts of the Walloon region (McKinsey & Company 1984b). In addition, the introduction of the milk quota in 1984 induced competition for the milk supply and a trend of rising milk prices paid to the farmers (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1988; 1991). The report written for the regional ministry of agriculture stressed that milk processing in the Walloon region was barely oriented towards added value products. The production of yoghurt and cheese did not match the volumes required by the distribution channels, and the production sites were not strategically located. This, together with the amount of debt the dairy cooperatives faced, hampered investment. The report called for more coordination between the 9 remaining dairy cooperatives or, alternatively, for a merger under centralized management (McKinsey & Company 1984b). Several discussions and plans to coordinate or merge the dairy cooperatives in anticipation of the upcoming European single market (CRISP 2020) did not lead to any concrete advance (McKinsey & Company 1984a; Lutgen and Anselme 1990). Dairy cooperatives separately sought investors to modernize their production plants and diversify their products, sparking a competition between French dairy groups (Besnier and the Union Laitière Normande). These groups ultimately held majority control over the Walloon milk processing plants

(Debergh 1992) against guarantees in terms of milk prices paid to the farmers (interview p1) . The Walloon dairy cooperatives remained active on milk collection only (Lutgen and Anselme 1990). At the beginning of 2000, the gradual increase of the quota diminished the tension on the milk collection market (Confédération belge de l'Industrie Laitière 2016). The French dairy group disengaged from milk processing plants, for which they had made limited investment in (interviews d3, d5). The remaining Walloon dairy cooperatives adopted three strategies in order to adjust to this new context, leading to the present landscape: remain small-scale and target local processors; join a European dairy group; or merge to buy the only existing milk processing plant still judged apt to guarantee a position on the market, centred on the production of milk powder, consumption milk and butter.

2.6. Factors impeding cooperative between dairy cooperatives

A plea to consider the diversification of dairy products to compensate and rationalise the production costs was made very early on (Office National du Lait 1970; Algemeen Verbond der Coöperatieve Zuivelfabrieken 1974) - as well as the plea for the dairy cooperatives to consider how to better coordinate their efforts and their investments (Union de l'industrie laitière belge 1970a; 1974). However, the Walloon dairy cooperatives failed to reach agreement on the consolidation model that would allow joint investment in concerted diversification and market strategies (Ministère de l'agriculture 1975b; Lutgen and Anselme 1990; InterSud 1978) (interviews m1, m3, p2, d1, d2, d3, a1, d5, d6, d7).

Two main models of consolidation exist: the coordination of activities between independent dairy cooperatives on the one hand; the integration of all dairy cooperatives under a centralized management on the other. The coordination of activities between independent dairy cooperatives

can take different forms, from a decentralized coordination of investments and commercial strategies of each dairy cooperative involved, to a joint investment in a common processing plant and/or marketing. These consolidation models were discussed among stakeholders within the sector (Berque, Dams, and Godbille 1963; Commission Nationale du Lait 1971; Vancauwenberghe and Lambert 1974; McKinsey & Company 1984b; Calicis 1988) and were present throughout the above-described evolution. In some cases, the coordination of dairy cooperatives through joint investments was a step towards the merger of the participating dairy cooperatives under a centralized management (interview d6) (Union de l'industrie laitière belge 1966; 1970b). In other cases, the consolidation strategy was based on coordination aimed at keeping the dairy cooperatives as independent organisations cooperating on investments and commercial strategy (interviews d2, d6) (Coferme 1988a).

While the implementation of a diversification strategy may occur through one or other consolidation model, disagreements on the choice of consolidation model that would support such a strategy occurred in the seventies (in the western and central parts of the Region) and in the eighties (at the scale of the Walloon Region). Concertation took place between the directors of the dairy cooperatives, who agreed on the need to diversify towards higher added value products other than milk powder and butter. The disagreements focused specifically on the enactment of the consolidation process that would support this diversification strategy (Groupe d'étude "Avenir des Laiteries du Sud 1973; McKinsey & Company 1984a).

This section reports the conjunction of factors mentioned in the archives and by the oral sources as having hampered cooperation between dairy cooperatives throughout the studied decennia, in the above-mentioned context of tensions/intense competition in terms of milk collection linked to the EEC CAP policies. These factors relate to the

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structural features of milk production in the region (2.6.1), the attitude of the dairy management towards consolidation (2.6.2), the farmers' attitude towards the cooperative (2.6.3) and their reactions towards consolidation (2.6.4), and finally to the specific philosophical and institutional background in which the dairy cooperatives evolved (2.6.5).

2.6.1. Structural features adverse to cost optimization and industrial profitability

The eastern part of the Walloon Region presented a high herd density and specialized dairy herd (De Baere 1973; Ministère de l'agriculture 1975b; Van Hecke 1976). Conversely, the low herd density, the herd features, the milk use on farm in the western and central parts of the Region (detailed in Table 3) were not favorable to the cost optimization of industrial milk processing plants (Ministère de l'agriculture 1975b; Vancauwenberghe and Lambert 1974).

Table 3 : Factors linked to herd and farming system features that affected the profitability of investments in milk processing tools in cooperative dairies in the 1960s, 1970s and 1980s in the western and central parts of the Walloon Region (Ackerman 1966; De Baere 1973; Ministère de l'agriculture 1975b; Van Hecke 1976)

Structural factor	Characteristics	Aspect of the milk processing workflow affected	Impact on the aspect identified in the previous column
Geographical herd density	Production per square kilometre represented 93000 litres/km ² , much lower than in the eastern part of the Region (141000 l/km ²)	Milk collection	More costly (higher distance/litre milk collected)
Herd features	Mixed races with a lower milk	Milk collection	More costly (higher

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	production per cow			distance/litre milk collected)
Herd features combined with the farming system based on grassland	Mixed races with a stronger seasonality of milk production	Profitability of transformation equipment	of	Variability of the quantity of milk transformed around the year, leading to losses in profitability of the processing tools
Percentage of on-farm milk use (of significance in the 1960s)	Up to 75% during the 1960s	Milk collection and strategic planning of processing plants		Vulnerability to the changes in EC policies (Mansholt plan) favouring on-farm milk-use – subsequent decrease in milk collection
Collection of cream and milk by the farmers (until the 1980s)	Until the 1980s, the dairy cooperatives collected separately milk and cream from farmers who used skimmed milk on-farm	Milk collection		More costly (double collection)

In the Walloon Region, the EEC intervention mechanisms on milk powder and butter (De Baere 1973) influenced the focus of production and the scale of the investments in industrial processing plants (Interview d7). Analysts consider that the management of dairy cooperatives relied too much upon EEC intervention mechanisms and insufficiently explored the possibilities of dairy products with a higher market value, other than milk powder and butter (McKinsey & Company 1984b; Vancauwenberghe and Lambert 1974; Debergh 1992). Oral sources from the farmers' union at the time attribute this to an insufficient schooling of dairy directors and a lack of culture in business matters and

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entrepreneurship (interview u1, a1). However, one public analysis (Office National du Lait 1970) highlighted the inability of dairy cooperatives to consider changes of strategic orientation due to the adverse effects of competition for milk on their investment capabilities. The effect of the competition for milk on the investment capabilities was again stressed in the 1980s (interviews u1, p2, d1). Additionally, this competition for milk and the associated economic difficulties, weighed strongly on the ability to consider a cooperation among dairy cooperatives competing against each other for milk (interview d1).

2.6.2. An ambivalent attitude of the management towards consolidation

There was, between the managers of the dairy cooperatives, an alleged lack of mutual trust in the above-mentioned context of milk competition (Coferme 1988a; Calicis 1988). Sources also express the adverse attitude of the directors of dairies towards consolidation (various correspondence 1962; Berque, Dams, and Godbille 1963). The position that directors were able to gain through consolidation, had an overriding impact on any approval they might give to the consolidation process (interview d1, p2, d3), a cause of the failure to reach an agreement between dairy cooperatives during the 1970s and 1980s (interviews d2, d3, p2).

2.6.3. Farmers acting mainly as milk suppliers

Dairy cooperatives acted out a competitive dialogue in front of dairy farmers, and along with EEC directives, in particular the Mansholt plan in 1968 and the introduction of the milk quota in 1984, the result was competition for the milk supply and a trend of rising milk prices paid to farmers (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1988; 1991). Analysts described “a shopping mindset” in the Walloon Region, with farmers leaving one dairy cooperative in favour of another when the

latter offered a higher price for the milk (Berque, Dams, and Godbille 1963; Vancauwenberghe and Lambert 1974). Dairy cooperatives favoured paying dairy farmers high farm-gate prices in an effort to prevent them from leaving their own cooperative for others which offered a better price. This decreased the profit margins of the dairy cooperatives and their investment capacities, whilst increasing the competition in milk collection (interviews p2, d3) (Office National du Lait 1970).

The statutes of some cooperatives foresaw a period of minimum-term membership – for example for a period of ten years (Annexe au Moniteur belge 1975), and although dairy farmers did leave dairy cooperatives in favour of others which they found more lucrative (interviews p1, d2), we found no traces of any legal enforcement of the period of minimum-term membership.

Until 1968, dairy farmers received a guaranteed farm-gate milk price, replaced in 1968 by an indicative price (De Baere 1973; Vancauwenberghe and Lambert 1974). This prompted more focus on the price received by dairy cooperatives and a logic of competition between dairy cooperatives (Office National du Lait 1970). The EEC intervention mechanisms led farmers to believe that, in terms of milk processing and marketing, there were no issues in terms of milk processing and marketing to consider (interview d1). Interviewees (p2, d1) described their inability to communicate to farmers the need to be aware of these issues, and for them to place the importance of investing the benefits generated in strategic development above the higher farm-gate price that farmers received.

2.6.4. Dairy farmers reacting adversely to the consolidations

As early as the 1960s, letters and reports indicate that farmers did not consider the consolidated dairy cooperative as their own: the cooperative threatened their interests (for example by internalizing the milk analysis

determining the amount they paid for milk) (various correspondence 1968; Fédération nationale des UPA 1968). Reports mention similar concerns after the creation of a unique dairy cooperative in the western and central parts of the Region in 1975 (*Le Sillon Belge* 1977; Dom Gueric Baudet 1978). Farmers also considered that the mergers of dairies diminished their ability to allow dairies to compete for the milk they sold (various correspondence 1968; Unions professionnelles agricoles 1968). Let us note the paradox of these observations, as the cooperative form is theoretically a mutually beneficial answer to alienating negotiations between production and processing levels (Hansmann 1996). In particular, in 1975, the mistrust of farmers was allegedly grounded in the fact that it was a top-down merger operation in which farmers lost the services previously offered by their cooperative (supplies and assistance) (Dom Gueric Baudet 1978) (interview d2) . As a whole, farmers tended to be lacking in the culture of cooperation (Coferme 1988b) (interviews u1, p2) and, as previous consolidations had not brought the hoped for profit margins, farmers tended also to be sceptical about any further attempt of consolidation (Vancauwenberghe and Lambert 1974).

2.6.5. An absence of coordination and support mechanisms in a heterogeneous philosophical landscape

The Belgian “cooperative organisations operated along religious lines due to socio-religious confessionalisation” (Henriksen, McLaughlin, and Sharp 2015, p.41). In the northern part of the country, for example (the Flemish Region), the cooperative agricultural sector was organized within the Catholic pillar. The Flemish main agricultural union, the *Boerenbond*, acted also as a financial and counselling power. The *Boerenbond* granted loans to dairy cooperatives and to farmers and

organized counselling services (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1981; Molle 1990).

In contrast, the Walloon landscape was less unified and coordinated. Some dairies were closer to the liberal pillar and its farmers' union the UPA (*Unions Professionnelles Agricoles*), whilst other dairy cooperatives were closer to the catholic pillar and the smaller Boerenbond-related Walloon Union AAB (*Alliance Agricole Belge*) (interview u2), or the Boerenbond's AVCZ (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1981). Contrary to the situation in the neighbouring Flemish Region (Algemeen Verbond der Coöperatieve Zuivelfabrieken 1981; Molle 1990), the Walloon unions did not have the means to offer similar support (interviews u1, a1). This heterogeneity of the landscape in terms of political ideology did not favour an attitude of trust between the management of the dairy cooperatives when discussing merger operations (interview d2).

2.7. Discussion

Throughout the evolution of the Walloon dairy cooperatives, a recurring pattern of economic difficulties can be observed. This pattern can be linked to the structural vulnerabilities affecting the industrial profitability of the processing plants, in particular in the western and central part of the Region: low herd density, high seasonality of production, and the financial weight of previously made investments. The empirical material also reveals a pattern of recurring failure to amend these economic difficulties through concerted strategies of investment aimed at increasing the end-product margins and reducing the weight of the cost-inefficient structural vulnerabilities. Of significant importance here, seems to have been the adverse attitude of the cooperatives' management to cooperate on a consolidation strategy, in a context of strong competition among dairy cooperatives for milk. The fragmentation of the cooperative's landscape at the end of the 1980s and

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the inability of dairy cooperatives to reach agreement on cooperation on strategy and investment, did not create strength in the face of the competing French dairy groups seeking to invest in the Walloon processing plants. In light of the European Union milk quota allocations, the take-over of processing plants by the French dairy groups can be seen as an attempt to expand their territory of milk collection and safeguard their own milk supply. This hypothesis is supported by the fact that these groups soon disengaged themselves when the tension in milk collection decreased through the European Union progressively increasing those milk quotas, and by the fact that these groups actually invested poorly in the processing plants they had taken over. The initial plans behind the attempt to merge/coordinate all dairy cooperatives around a common project, in 1984, foresaw the recourse to external investors, but with greater participation of the Walloon dairy cooperatives. The fragmentation of the landscape following this failed attempt, as well as the separate deals with groups of a much larger scale, did little to empower the dairy cooperatives when it came to negotiation.

The inability of dairy cooperatives to align themselves on a common strategy, is grounded in a heterogeneous and poorly coordinated landscape, with little structural support offered to the cooperatives (level 1 in Williamson's framework). Our findings match up with comparative studies conducted on the influence of the institutional, political and cultural context on the economic performance of dairy cooperatives in Ireland and Denmark at the end of the 19th century (O'Rourke 2007; McLaughlin and Sharp 2015). These studies stress the heterogeneous landscapes, in particular the political divide, which hindered cooperation by generating tension adverse to cooperation. Conversely, homogeneous political landscapes offered the necessary social cohesion to allow agents to cooperate within defined institutional frames (level 3 of Williamson's framework) and support the economic activities of the dairy cooperatives. The stark contrast between the institutional framework of support for

cooperatives within the Flemish Region, compared to those of Walloon Region, aligns with these studies.

At institutional level, the legal enforcement of binding contracts between the farmers and the cooperatives (level 3 of Williamson's framework) has also been studied (Henriksen, Hviid, and Sharp 2012; Henriksen, McLaughlin, and Sharp 2015). The authors concluded that this legal enforcement was a factor in diminishing the 'shopping-around' attitude of the farmers. They described positive feedback in terms of the commitment of farmers (level 1 of Williamson's framework) towards their cooperative, with concrete results in terms of the delivery of milk and the quality of the products delivered. Our results definitely identify a tendency to shop around and, together with the absence of any enforcement of contracts, competition between dairy cooperatives were a regular occurrence during milk collection shortages induced by the EEC CAP policies. The adverse feedback impacted on the issue of trust between cooperatives, as observed in our results (feedback of level 4 to level 1), which in itself influenced future cooperation on common goals, also described in these studies (Henriksen, McLaughlin, and Sharp 2015).

At the level of the farmer, the lack of commitment towards the dairy cooperative emerges from a lack of trust towards consolidated cooperatives. The effect of this feedback was aggravated because of the poor economic performances of the consolidated cooperative, and the loss of services through the consolidation process. This type of feedback loop (from level 4 to level 1) is also described by Henriksen, McLaughlin and Sharp (2015). Whereas trust alone is not a sufficient condition to ensure the commitment of farmers towards cooperative schemes (Garrido 2014), the absence of trust certainly did not favour the commitment of farmers towards consolidation schemes for which they had expressed feelings of alienation. This lack of trust further aggravated the competition between dairy cooperatives on milk collection, and hence reinforced the Walloon dairy cooperatives' pathway of economic

inefficiency. This was further detrimental to the farmers' trust in consolidation schemes.

The lack of trust and commitment of farmers and between cooperatives occurred in a heterogeneous and uncoordinated institutional landscape, resulting in competition between dairy cooperatives in the wider context. This lack of commitment was also evident in our results, linked as it was to the dairy cooperative as institution, and to the relationship of the farmer-member towards this institution. For example, the farmers expressed their dissatisfaction in not having different dairy cooperatives compete for their milk. This perception is paradoxical, as the cooperative form is theoretically a mutually beneficial answer to negotiations between production and processing levels than can otherwise be alienating for the farmer (Hansmann 1996). This result suggests that the cultural relationship to the dairy cooperative was exempt from the consideration that the cooperative was a structure grounded in benefitting the farmer. The results also identify the issue of commitment as arising from the farmer's dual role as both milk supplier and as principal investor. There did indeed appear to be tension between the interests of the farmer as milk supplier, and his/her commitment to the development of the cooperative as a member, namely in terms of the investment of the residual benefits in the cooperative's development.

The adverse attitude of farmers to investment of the residual benefits is linked to the farmer's status of residual claimant within the dairy cooperative (Fama and Jensen 1983; Cook and Iliopoulos 2000). The historical cooperative model did not anticipate mechanisms with which to liquidate or exchange residual claims, except as the book value of patronage, totally disconnected from the value of the cooperative business itself. The principle of equality between residual claimants required the equal redistribution of the benefits, regardless of the seniority of the membership (Cook and Iliopoulos 2000). This arrangement did not

provide the incentive for farmers to invest the residual benefits into the cooperative (Chaddad and Cook 2004; Cook and Iliopoulos 2000), nor to envisage the long-term development of the dairy cooperative over short-term immediate benefit retrocession.

Our results show that the tension that existed between the function of milk supplier and the other dimensions within the cooperative membership, not only generated an adverse attitude towards investment, but also constituted a fundamental driver of the competition between dairy cooperatives and their subsequent inability to cooperate. The significance of this tension is closely tied into the industrial configuration of the dairy cooperatives: the profitability of the processing plants relies on guaranteeing a sufficient milk flow to the processing plant. The interests of the farmer, as principal investor on the short term, are hence aligned with his/her interests as milk supplier, as ensuring the profitability of the milk processing plant will also ultimately generate benefits. However, there is a problem between the short-term logic of remuneration of the milk to the farmers to ensure the profitability of the processing plant, and the long-term need to generate enough benefits for further development of the cooperative. Factors aggravating this tension are, as identified from our results:

- a scarcity of milk on the markets, either linked to high demand, or to policies reducing the production (for example, the EC CAP policies) ;
- conjunctural difficulties (for example, surges in oil prices increasing costs) ;
- structural economic difficulties (linked to higher structural costs – for example of milk collection) ;
- a lack of involvement of the farmers in the cooperative management ;
- a lack of trust towards the cooperative.

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The greater this tension, the more likely it is to impact on the structural difficulties of the dairy cooperative (pressure to pay the farmers to avoid them leaving the cooperative) and the aspect of trust from the dairy farmer, when he/she feels that he/she does not receive an adequate farm-gate price. The attitude of shopping around that may result from this lack of trust, often leads a vicious circle of exacerbated competition between dairy cooperatives, non-favourable to trust and cooperation. In the case of the Walloon Region, this lack of trust and cooperation among dairy cooperatives hampered the design of long-term diversification strategies through agreements on a consolidation model (be it coordination, joint investments, or merger). Hence, the complex interplay between an individual farmer's agency and the structure of collective agency tends to lock the trajectories of collective agency into non-optimal trajectories. It appears strongly dependent upon the broader context in which the cooperatives act. In our results, the economic conjuncture, the cultural and political landscape, and the absence of institutional support to dairy cooperatives, appear as key factors aggravating the strength of this lock-in.

The description of similar patterns affecting farmer involvement, strategic choices, and cooperation between dairy cooperatives in other contexts, and at different epochs (McLaughlin and Sharp 2015; O'Rourke 2007; Henriksen, McLaughlin, and Sharp 2015; Henriksen, Hviid, and Sharp 2012; Chloupkova, Svendsen, and Svendsen 2003) suggests that more attention is needed on the interplay between individual and collective agency as the driver of cooperative success and evolutionary pathways requiring the need for cooperation. Theoretically, this study confirms the relevance of mobilizing a micro-level and long-term pattern of analysis to draw insights on the potential for macro-scale pathways of change. In particular, this combination brought insights regarding the approach of lock-ins as factors impeding changes of pathways. Opening up and improving cooperation towards transition pathways requires

approaching lock-ins as being a complex and contextualized conjunction of factors, acting jointly and reinforcing themselves at different levels. Similarl to recent studies on agri-food transition dynamics (Vermunt et al. 2020; Farstad, Vinge, and Stræte 2020), our study stresses the potentially aggravating/facilitating effect of context and conjuncture on these complex dynamics of change.

On the individual level, this study stresses that more attention on the relationship between the dairy farmer and the cooperative is required. Beyond contracts binding the farmers to the cooperatives, our results stress the importance of cultivating trust and involvement in strategic steering as positive ways to ensure farmer commitment towards the cooperative as a structure of collective agency. In this respect, our study strongly connects with recent studies on the strength of agri-food organisations (Hubeau et al. 2019), and more particularly on the enactment of cooperative values in various contemporary cooperative models (Forney and Häberli 2017; Wynne-Jones 2017; D. Thompson 2020). Forney and Häberli (2017) indeed stress that the success of collective cooperative action lies in the recognition that there is an interdependency between the interests of individual and collective agents, as well as between collective agents. Our study shows, in this regard, that the long-term interests of both individual and collective agents may be hampered when both the former and the latter focus on their short-term interests: of milk remuneration in the case of the farmer, and of competition over cooperation in the case of the dairy cooperatives. The condition for this interdependency between individual and collective interests to generate long-term benefits is hence to manage the above-described conflicts which are likely to increase the focus of farmers and dairy cooperatives on short-term interests to the detriment of their long-term autonomy. These insights might be of particular relevance, in present days, in particular for the development of smaller-scale

cooperative models and their evolution towards consolidation in evolving landscapes.

2.8. Conclusion

This study revealed, through the case study of the historical evolution of the Walloon dairy cooperatives, the importance of the interplay between agency and structure as enabler or disabler of trajectories of collective agency, and in particular when cooperation between structures is needed to implement transition pathways. The function of farmers as milk supplier acts as the source of a structural tension between short and long-term collective interests. The effects of this conflict are aggravated in unfavourable economic contexts and politically divided landscapes. Conversely, supporting institutions might mitigate these effects. This study recommends a focus on agricultural cooperatives within the angle of an agent-structure interplay, as this agent-structure interplay and the context in which it takes place defines strategic choices and an (in)ability to explore given pathways. This study confirms, in this regard, the relevance of approaching transition processes from a micro-level perspective as a way of uncovering the (in)ability of individual and collective agents to act along a given macro-scale transition path.

Chapter 3 - Consolidation models and interplay
between the individual agency of farmers and
the governance of dairy cooperatives: a SWOT
analysis

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1. Introduction

The previous chapter explored how dairy cooperatives, as structure of collective agency, may be hindered in their trajectories of transition by lock-ins emerging from the interplay between their governance structure and the individual agency of farmers. In particular, chapter 2 identified that the tension between the interests of the farmer as milk supplier and principal investor tied with the requirements of profitability of the industrial model and constituted a structural driver of the competition between dairy cooperatives and the subsequent inability to invest and cooperate towards diversification pathways. This chapter also identified to which extent the approach of the lock-ins emerging from this interplay needed to be contextualized, as elements of context could reinforce, or conversely, mitigate the effects of this interplay. For example, structural or situational economic difficulties, politically divided landscapes play as aggravating factors whereas institutional support, in terms of coordination, tends to mitigate these effects.

The present chapter intends to pursue the comprehension of the lock-in effects linked to this agent-structure interplay in dairy cooperative. The previous chapter demonstrated to which extent the relationship between the dairy cooperative and the farmer triggered lock-in effects in the decision-making process and the consideration of diversification strategies of dairy cooperatives, including in cooperation with other dairy cooperatives. Dialectically, we consider in this chapter how governance in consolidation processes (defined, drawing on Shields (2010) as the shifts to fewer and larger firms), may act on this structural agent-structure interplay of the dairy cooperatives, and either reinforce or mitigate the lock-ins emerging from this interplay.

Governance processes are the organisation of collective action around three dimensions: the property rights, the contracts used to frame these rights, and the contract-derived coordination mechanisms employed to

organize the transactions (interactions among partners related to exchange and allocation of resources). These three dimensions define the particular pattern of working of an organization, in particular the balance of interests between its members (Grandori 2017; Ménard 2017).

Organization theory traditionally sees the form an organization takes as depending on the frequency of the transactions, the uncertainty of the transaction and the specifics of the transactions among buyers and sellers of production factors. Every organization is a complex mix aiming at reducing the transaction costs between partners in collective action (Ménard 2017; Hobbs 2017; Hansmann 1996; Williamson 1987). For instance, in the previous chapter, we referred to the fact that dairy cooperatives developed as farmer-owned organisations, because they presented benefits in terms of transactions between the farmers and the milk processing stage. In particular, dairy cooperatives allow the farmers to benefit theoretically from (Hansmann 1996) :

- The circumvention of the monopsony of buyers and the reduction of a possible feeling of alienation toward the processing level ;
- Positive externalities in terms of marketing (no time spent in negotiations to sell the milk anymore) and a reduction of the asymmetry of information with the processing stage ;
- Stable long-term transactions with the processing stage;
- Efficient management of investment related costs, also through the mobilization of advantageous tax and subsidies.

Organisations however do not develop in a vacuum. Transactions develop at the micro-institutional layer of the organisation (the level at which “transactions are actually drafted, negotiated and implemented” (Ménard 2017)), but these transactions are framed by meso-institutions, namely laws, regulations and “other rules and norms that establish at national level the rights and the modalities of their allocation, thus

framing potential usage of these rights” (Ménard 2017). Additionally, micro-level organizational choices and meso-institutional legal frames might be under the influence of macro social and political movements carrying a given cultural approach of organizational forms (Schneiberg, King, and Smith 2008; Hansmann 1996). In agri-food value chains, in particular, adds the complexity that organizations are neither based on a succession of pure consecutive market relationships, from producers to processors to traders (Ménard 2017), nor do they fit into the traditional definition of firms as hierarchal body in terms of decision-making (Grandori 2017).

The consideration, alongside property rights alone, of decision rights, as the fundamental features on which organization members agreed by means of contracts (Ménard 2017), provided an adequate framework to consider the diversity of governance arrangement, of which some are defined as “hybrids”. Hybrids exist as organisational forms between spot market relationships (the buying and selling of goods and services outside of any contractual relation) and hierarchies (the ‘classic’ definition of firms where internal relations are coordinated by authority relations) (Grandori 2017; Ménard 2017). Classicly, “hybrids” in organizational studies, define “organizational arrangements in which two or more partners pool strategic decision rights as well as some property rights, while simultaneously keeping distinct control over key assets” (Ménard 2017). Hybrids presents a greater complexity in coordination mechanisms than “arrangements in which parties interact mainly through the price mechanisms (spot markets)”, where there is “no room for mutually negotiated adaptation” ; and “from integrated organizations (hierarchies) within which adjustments are made in last resort through forms of command and subordination” (Ménard 2017). Grandori (2015; 2017) stresses that cooperatives, even when they are vertically integrated and hold with the milk processing stages a relationship of command and subordination, however presents in their relationship with the farmers-

members features of hybridity. How farmers relate to the cooperative, interacts as milk supplier and make decisions as cooperative member ties indeed more with the features of a democracy than those of a hierarchy (Grandori 2017). Additionally, the intercooperative scheme, where dairy cooperatives define agreements of joint investments and concertation in milk allocation, investments and marketing of products, is a hybrid configuration answering to the above-mentioned classic definition of hybrids. Ultimately, any interaction between a dairy cooperative and the milk processing stage that does not fall within the category of the vertical integration constitutes a case of hybridity.

The previous chapter demonstrated to which extent this feature of hybridity in the relationship between the dairy cooperative and the farmer triggered lock-in effects in the decision-making process and the consideration of diversification strategies of dairy cooperatives, including in cooperation with other dairy cooperatives. This chapter focuses specifically on the challenges of hybridity linked to the cooperation between dairy cooperatives, when they envision or enact a consolidation process.

An important focus is given, in the field of organisational, studies on the characterization of hybrid organizations, for instance on characterization of the nature of the contracts binding the partners (Hobbs 2017; Grandori 2017). Our focus lies in this chapter on the outcomes of these contractual relations, namely the coordination processes (the patterns of interactions among partners related to the exchange and allocation of resources) observed in the historical trajectories of the Walloon dairy cooperatives, in particular in their trajectories of consolidation.

We pay attention, in these consolidation processes, to two dimensions where hybridity may arise and define specific coordination processes:

1. The vertical dimension, i.e. the contract-derived arrangements defining the relationships at vertical level, between the milk collectors (organized in dairy cooperatives) and the stages situated downwards in the dairy value chain (milk processing, to start with) and ;
2. The horizontal dimension, i.e. the contract-derived arrangements defining the way that the relationships are organized between dairy cooperatives in consolidation processes.

The first dimension ties with the organization of property rights (vertical coordination), and may span from spot-market relationships to vertical integration. The second dimension ties with the organization of decision-making in the consolidation process (horizontal coordination), and may span from inter-cooperative agreements to merger.

The objective of this chapter is to consider the variety of coordination models encountered in the trajectories of consolidation of the Walloon dairy cooperatives, and to analyse the strengths and weaknesses of each model, considering the challenges identified in the previous chapter, in terms of cooperation between dairy cooperatives and trust and commitment of the farmer-members. The importance of considering these strengths and weaknesses and their effect on these two dimensions stems from the well-described challenge of incompleteness of contracts as frames of inter-firms relationships (Hobbs 2017). Relational contracts “cannot do it all” (Ménard 2017). In particular, the stability and the resilience of a given arrangement may be endangered by the opportunistic behaviour of a partner (Hobbs 2017), in particular, when heterogeneous partners remain potential competitors, and when possible alternative hybrid arrangements compete against each other (Ménard 2017). These

particularities were present in the Walloon region in the CAP-induced context of milk competition, and the previous chapter demonstrated to which extent the very nature of the dairy cooperative and the relationship with the farmer-members constituted in this context a structural factor adverse to the stability and resilience of the cooperation between dairy cooperatives. This chapter takes the dialectic approach consisting in trying to understand whether a given coordination arrangement among dairy cooperatives and with the milk processing stage may mitigate, or on the contrary, accentuate the factors defining lock-ins to the Walloon dairy cooperative's interactions and cooperation in consolidation pathways, identified in the previous chapter.

In this regard, this chapter pursues the approach aiming at refining the approach of lock-ins and stressing how their strengths and effects has to be considered within a contextualized agent-structure interplay. This includes taking into account the role of the organisational design as possible reinforcing or mitigating factor of the lock-ins generated by this agent-structure interplay.

2. Material and methods

This chapter builds on the historical investigation of the trajectories of the Walloon dairy cooperatives conducted on the base of archival material, published sources and oral sources, of which a detailed exposure is available in French (De Herde 2020) and a synthetic summary is proposed in the previous chapter. From this investigation emerged many accounts, in the archival and the interviews of the oral sources, discussing the models of coordination of the consolidation processes. These are reports and debates among stakeholders related to the consolidation models, as well as accounts stressing the effects of the consolidation models on the relationship with the farmers, on the investment strategies, on the response to market opportunities, and to market context.

We organized the characterization of the plus and minuses of the different coordination models identified following the principles of a SWOT analysis (Ghazinoory, Abdi, and Azadegan-Mehr 2011). The mobilization of the SWOT framework is here instrumental, in the sense that it allows revealing, in an organized way, the perception that the actors had of each model. The intrinsic weakness of the model pointed out by Ghazinoory et al (2011), that is the dependence of the viewpoint of the user of the framework, is here taken for granted as the framework is used as an organizing tool of these viewpoints on the strategic position of a specific model (Helms 2011).

The SWOT framework of analysis allows to consider the coordination models in terms of strategic management (Hobbs 2017) and hence to replace the effect of the coordination model on the intrinsic agent-structure interplay without being oblivious of the fact that the model may also be under the influence of a potentially changing context. Hence, organizing the plus and minuses of each coordination model within this framework will facilitate the interpretation of the mitigating or aggravating effect of each coordination model on the lock-ins emerging from the agent-structure interplay, considering the contextual factors.

3. Results

The results consider first the variety of consolidation models appearing in the historical trajectories, as theoretically considered (points 3.1.1 and 3.1.2) and as implemented in the historical trajectories of the Walloon dairy cooperatives (points 3.1.3 and 3.1.4). We further characterize the models identified in terms of strategic management, by using the SWOT analysis framework (point 3.2).

3.1. Overview and characterization of the consolidation models

3.1.1. A diversity of models considered by the stakeholders

The question of, how to organise a concerted strategy among the Walloon dairy cooperatives, has been discussed in many official and unofficial reports, and give interesting options, spanning from simple coordination to vertical integration.

Table 4 summarizes the various studies and propositions made throughout the decennia 60, 70 and 80 to organize the dairy sector, at national, regional or provincial level. In the following table, we expose the propositions in chronological order.

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Table 4 : Propositions of horizontal and vertical coordination in the consolidation processes, in chronological order

Source of the plan	Geographical scope of the proposed plan	Solution proposed	Type of coordination	Vertical coordination	Horizontal coordination
Office national du lait (ONL) – report from 1963 (Berque, Dams, and Godbille 1963)	National	Coordinate the various dairy cooperatives around industrial poles where they would have participations. The dairy cooperatives would take the milk collection in charge and deliver milk to the industrial poles – themselves also coordinated in a common commercial department	Coordination model without vertical integration – separation of the activity of milk collection and the activity of milk processing, coordination through participation of the milk collection dairies in the capital of the industrial dairies	Through participation in milk processing plants, who further more develop a common commercial department	No merger of dairy cooperatives – but coordination of milk allocation
Commission Nationale du Lait – 1971	National	8 key-milk processing factories distributed across the country,	No precisions – seems to consider that the milk collection will be	Vertical integration	Merger of the dairies to reach eight

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(Commission Nationale du Lait 1971)		only qualified to receive state support.	integrated to the milk processing structure		vertically integrated structures
1973 – plan for the dairy cooperatives of the provinces Hainaut, Namur and Luxembourg (Calicis 1973)	Provinces of Hainaut, Namur and Luxembourg	Orient the dairies towards productions with higher profitability margins (milk, cream, cheese, yaourts, desserts, etc) ; coordinated milk collection on separate territories ; concentration of the production on the most adapted geographical sites ; coordinated commercial strategy	Coordination between dairies without merger – concentration of the processing activities on specific sites	Through participation in milk processing plants	No merger of the dairies but coordination of milk allocation, of the investments in the production plants and of the marketing strategies
1974 – proposition for the provinces Hainaut, Namur and	Provinces of Hainaut, Namur and Luxembourg	Establish dairies for milk collection – who sell their milk to industrial poles	Let the market act for an optimization of the sale of milk to milk processors – allow dairies to select the	No vertical integration and no participation of the dairy farmers	No merger of the dairies – no coordination of milk allocation

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Luxembourg (Vancauwenberg he and Lambert 1974)		independent from milk collection activities	destination of their milk	in the processing stage	
Plan of the CMCES 1975 (Ministère de l'agriculture 1975a)	Provinces of Hainaut, Namur and Luxembourg	Merge all dairies into one unique dairy	Milk collection and processing integrated in one structure – cooperation with existing marketing structures of the intercooperative Interlait	Vertical integration (that doesn't include the marketing stage)	Merger of the dairies in a unique vertically integrated structure
1984 - Proposition of McKinsey (1/2) (McKinsey & Company 1984a)	The Walloon Region	Coordinate the milk collection, the research and investments, coordinate the product marketing	Each dairy works independently but in a coordinated way (at best). The coordination can lead to the participation to common projects of milk processing and product marketing	Through participation in milk processing plants	No merger of the dairies but coordination of milk allocation, of the investments in the production plants and of the marketing strategies

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<p>1984 Proposition of McKinsey (2/2) - (McKinsey & Company 1984a)</p>	<p>The Walloon Region</p>	<p>Merge all dairies in one structure with multiple production sites</p>	<p>One management for all processes, from milk collection to product marketing</p>	<p>Vertical integration</p>	<p>Merger of the dairies in a unique integrated structure</p>
<p>proposition of the CCO in 1988 of the “Interlait group”(Coferme 1989; Lutgen and Anselme 1990)</p>	<p>The Walloon Region</p>	<p>Merge all cooperative dairies in one milk collection cooperative dairy, transfer the ownership of their tools to a limited liability company party owned by the cooperative dairy</p>	<p>The division between milk collection and production in two distinct companies aims at facilitating the participation of external investors in the capital of the company, and hence answer the inability of the cooperative to do so</p>	<p>Through participation in milk processing plants</p>	<p>Merger of the dairies in a unique milk collection structure</p>

3.1.2. Three models of vertical coordination

We identify three models of vertical coordination in these propositions: one based on no link between milk collection and the downward processing of milk; one based on coordination and participation of the milk collection in the milk processing; one based on vertical integration.

- Model 1 based on no link between milk collection and the downward processing of milk. This model was proposed as a solution for the dairy cooperatives of the provinces Hainaut, Namur and Luxembourg in 1974 in a master thesis (Vancauwenberghe and Lambert 1974). It is a non-integrated – non-coordinated model that leaves it to the market opportunities to define the relationships between milk collection and milk processing. Dairy cooperatives, in this configuration, would typically act as what Hansmann (1996) defines as “bargaining cooperatives”.

- Model 2 based on coordination and participation : in which we find :
 - the proposition made by the ONL in 1963 (Berque, Dams, and Godbille 1963) ;
 - the proposition of reorganisation of the dairies of the provinces Hainaut, Namur and Luxembourg (1973) (Calicis 1973) ;
 - the first proposition made by McKinsey for the dairy cooperatives (McKinsey & Company 1984a).

These models are based on participations from the dairy cooperatives in milk processing and marketing firms.

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- Model 3 based on the integration of the various operations, from milk collection to commercialization, in one or two structures with centralized management, in which we find:
 - the plans of the *Commission Nationale du Lait* of 1971 (Commission Nationale du Lait 1971) ;
 - the project of the CMCES for the merger of the dairy cooperatives of the provinces Hainaut, Luxembourg and Namur in 1975 (Ministère de l'agriculture 1975a) ;
 - the second proposition made by McKinsey for the Walloon dairy cooperatives in 1984 (McKinsey & Company 1984a);
 - the project of constitution of the “groupe Interlait” in 1988 including all dairy cooperatives of the Walloon region (Coferme 1989; Lutgen and Anselme 1990).

These are models of vertical integration.

Let us note that we put the CCO project (1988) in the vertical integration category, because it is an evolution of the vertically integrated model for the sake of investment and not because a multiple participation in various production tools is considered. A model based on participation could evolve towards a similar configuration over time, in case the dairies merge. The CCO model is the closest to how the models of dairy cooperatives evolved at a wider European scale as from the 80s (Juliá-Igual, Meliá-Martí, and García-Martinez 2012; Filippi, Frey, and Mauget 2008; Koulytchizky and Mauget 2003) and also how the Walloon dairy cooperatives evolved in their models in the nineties.

Figure 30 illustrates the distribution of every proposition, taking into account their degree of vertical coordination and their degree of horizontal coordination:

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- Their degree of vertical coordination may span from the absence of coordination past the stage of milk collection, to participation in downward activities towards vertical integration ;
- Their degree of horizontal coordination may span from no coordination between dairies towards limited coordination (at the level of milk allocation only), to increasing coordination (in terms of investments in plants and marketing strategies), towards merger of the dairy cooperatives in a sole management structure.

This representation aligns with Ménard (2017)'s representation of the types of organizational management in organizational studies, considering on the x-axis the property-right linked degree of control over strategic investments (here the control of the milk processing plants) and on the y-axis the degree of centralization of decision rights on milk allocation, milk processing and marketing of dairy products.

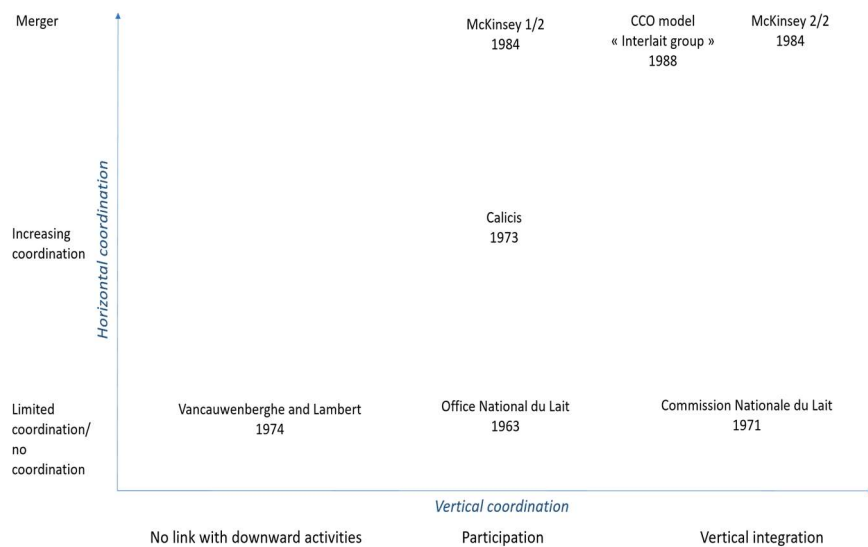


Figure 30 : representation of the different coordination models, following the axis of growing vertical coordination (x-axis) and growing horizontal coordination (y-axis). The yellow arrows in the models represent the product fluxes

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3.1.3. Modes of coordination in the consolidation models of the Walloon Region, from 1948 on

Over the course of evolution of the Walloon dairy cooperatives, we can find organisation models that get close to each of the theoretical models exposed hereabove (with variations). The course of evolution of the forms of coordination of the Walloon dairy cooperatives is presented in Figure 31.

In the model of vertical coordination through participation in processing plants, we naturally find the intercooperative models grounded from 1948 to 1965. In the vertically integrated model, we find dairy cooperatives from the province of Liège keeping an independent model of development without horizontal coordination with other dairy cooperatives, or participation in intercooperative processing plants until the 90s. We can relate the economic success in keeping an independent model of development to the structural features of the province of Liège in terms of farming systems, favourable to cost optimization of milk processing structures (see preceding chapter).

We can notice that all models coalesced in the 90s towards foreign investment in processing plants (de-integration and participation to allow investments), from which the two main models (*Laiterie des Ardennes* and *Arla*), now present in the Walloon, region emerged.

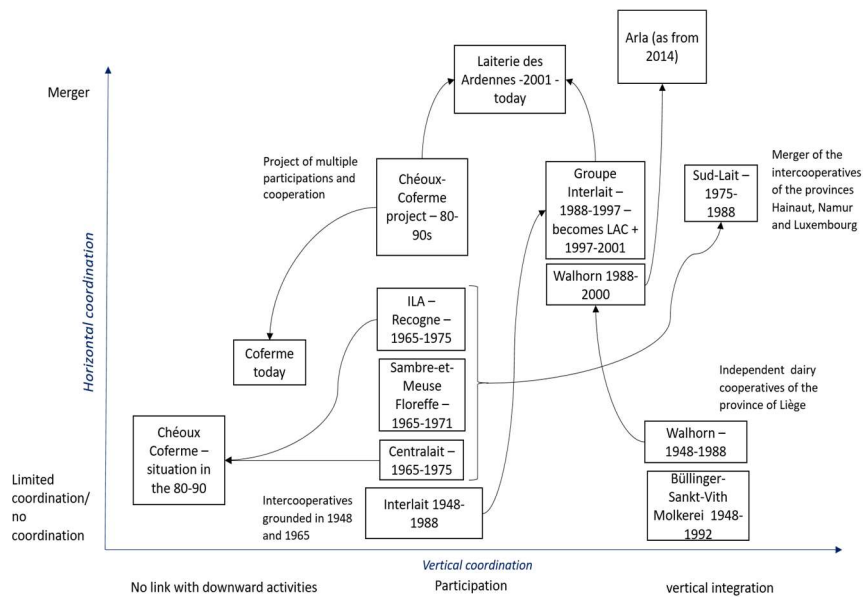


Figure 31 : Visualization of the models of coordination effectively developed among the Walloon dairy cooperatives during the second half of the 20th century.

3.1.4. Three variants in horizontal coordination within the Walloon intercooperative models

If we proceed to make a zoom on the intercooperative strategies (vertical coordination through participation), we can identify three sub-variants of horizontal coordination between dairy cooperatives in the intercooperative strategies:

- a variant where the cooperative dairies do not invest in a processing plant but coordinate milk collection and allocation among the different installations of the cooperative dairies (the case of the intercooperative Centralait – province of Hainaut - from 1965 to 1975) (Figure 32);
- a variant where an intercooperative milk processing plant and commercial structure develops but dairies maintain their own production plants and marketing activities at the same time (the case of the intercooperative Interlait – province of Liège from 1948 and 1988) (Figure 33);

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- a variant where dairies centralize all their productions in a unique milk processing plant and commercial structure with centralized management (the case of the intercooperative ILA – province of Luxembourg, and of the intercooperative of the province of Namur) (Figure 34). The dairy cooperatives keep acting as independent cooperatives in their side activities of sale of fertilizers and livestock feed to the dairy farmers – whereas they coordinate the milk processing activities through a centralized management. This type of horizontal coordination is the closest to the effective merger of the dairy cooperatives.

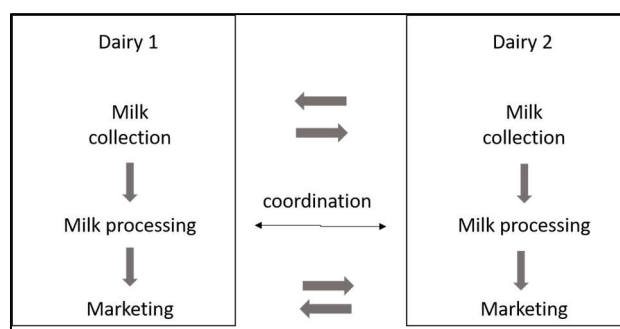


Figure 32 : Representation of the horizontal coordination model developed in the intercooperative Centralait – the large grey arrows represent the product fluxes.

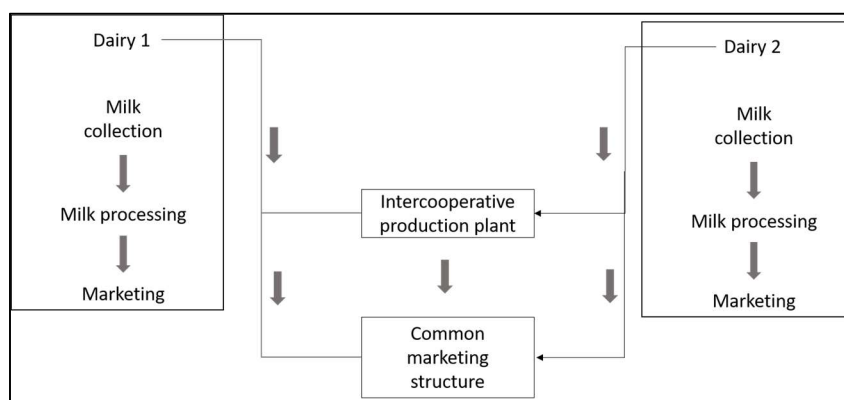


Figure 33 : Representation of the horizontal coordination model developed in the intercooperative Interlait – the large grey arrow represent the product fluxes

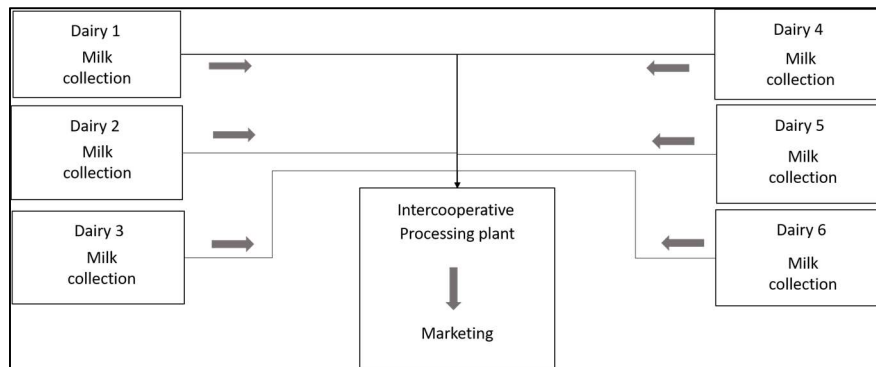


Figure 34 : Representation of the horizontal coordination model developed in the intercooperative ILA-Recogne (the large grey arrows represent the product fluxes)

3.2. A SWOT analysis of the consolidation models

As our historical analysis confronted us with the whole variety of the models of vertical and horizontal coordination, and included accounts of stakeholders as to the benefits and weaknesses of the models explored (De Herde 2020), it gave us many pieces of information about what are the plus and minus of each coordination identified in points 1.1.1 and 3.1.4. The following SWOT analysis replaces these features in a strategic management perspective.

Among the stakeholders who reacted as to the benefits and weaknesses of the models explored, we find:

- reports considering the organization of the dairy sector at national level (Berque, Dams, and Godbille 1963);
- discussions at national level among ministers of the national government related to the intervention of the ministry of agriculture to support the merger of Walloon dairy cooperatives in 1975 leading to the creation of the dairy cooperative Sud-Lait (Comité ministériel de coordination économique et sociale 1975; Inspectie van Financien - Departement Landbouw 1975);

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- archival material (letters, reports of meetings, reports of analysis) created by directors, members of the boards of two dairy cooperatives (Chéoux, Coferme), or reporting their analysis (Coferme 1978; Goffin 1984; Ska 1988; Coferme 1988b; Calicis 1988; Le Sillon belge 1989) or the analysis of related local support structures (InterSud 1978; Dom Guerric Baudet 1978; Association pour le Développement Rural ASBL 1989). Both dairy cooperatives have considered in the 80s a project of coordination with other dairy cooperatives of the Region (Coferme 1988b);
- letters exchanged between dairy cooperatives (Coferme and Sud-Lait) in the frame of the management of a coordination scheme between both dairy cooperatives (Youcken and Demeur 1988);
- accounts of the meetings organized among the dairy cooperatives of the Region following an audit-report of the consulting firm McKinsey on the future developments of the sector (McKinsey & Company 1984a);
- anticipations and observations from representatives of sectoral organizations and farmers' unions, under the form of archival material (Debergh 1992) or oral accounts (interview u1, u2);
- oral accounts of a former president of the vertically integrated Walloon dairy cooperative Sud-Lait (interview p1) during the decennia 80, of the vertically integrated walloon dairy cooperative Walhorn during the decennia's 80 and 90 (interview p2), of the cooperative Coferme during the decennias 80 and 90 (d2).

3.2.1. A SWOT analysis of vertical coordination models

Table 5 presents the SWOT analysis of the three vertical coordination identified in point 3.1.2: no participation in the milk processing stage, coordination through participation and vertical integration.

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Table 5 : SWOT analysis of the models of vertical coordination

Model	Strenghts	Weaknesses	Ideal conjuncture for the model - opportunities	Threats
Model 1 – no vertical coordination : Let the market act for an optimization of the sale of milk to milk processers	<p>Flexibility in terms of market opportunities, possibility to select milk allocation, no dependence to a particular milk processing plant, hence, possibility to adopt strategical decisions independently from the profitability of the milk processing tools (Coferme 1988b, p.1 report of the description of the strategy of the dairy cooperative Chéoux, based on a conversation between the director of Chéoux and a member of the board of directors of Coferme)</p> <p>Maximisation of the rationality of allocation in terms of milk delivery, milk processing and product</p>	<p>- If no binding contracts with the processing stage, permanent position of negotiation (potential high transaction costs) (Coferme 1988, p.1 report of the description of the strategy of the dairy cooperative Chéoux, based on a conversation between the director of Chéoux and a member of the board of directors of Coferme ; p.2, reporting the observations made by the director of the dairy cooperative Chéoux on his own experience)</p>	<p>Tensions on the market of milk collection (important demand, low supply) ; market demand for milk with specific features (taste, composition, farming model) (Association pour le Développement Rural ASBL 1989, p.2 analyses the situation of the cooperative Coferme)</p>	<p>- Vulnerability in case the offer on the market of milk (as raw material) is abundant ;</p> <p>- vulnerability in case there is a high size discrepancy with the milk processing companies (Association pour le Développement Rural ASBL 1989, p.2 analyses the situation of the cooperative Coferme and possible plans of milk delivery to an large-size dairy group)</p>

	commercialization (Berque, Dams, and Godbille 1963, pp.20-21 discussing the advantages of separating milk collection and milk processing and p 22-23, commenting on the fact that the industrial production can be centralized in four or five perfectly equipped processing plants associated with a “powerful” marketing service.)			
Model 2 – vertical coordination through participation in processing plants	<p>- Diminishes the vulnerability in terms of negotiation identified in the weaknesses of model 1 ; (Calicis 1988, p.2 commenting to the Secretary General of the Ministry of Agriculture on the possible models of coordination to develop for the Walloon dairy cooperatives)</p> <p>- allows to multiply the participation in milk processing tools, and to guarantee a diversity of outcomes ; (Goffin 1984, p.4 commenting the propositions made</p>	- in case the participation is centred on a limited amount of milk processing site, the choices can still, as in the case of vertical integration, be dictated by the profitability of the plants rather than the profitability of the milk suppliers (see hereunder). There is additionally a risk of unbalance in the	Homogeneous cultural landscape, culture of dialogue and coordination, presence of structures of concertation (interviews u1, u2, d2, stressing the absence of these conditions in the Walloon Region, which hampers attempts at coordination between dairy cooperatives)	- Strongly integrated models that can orient their means more easily and massively on given productions and market segments (Goffin 1984, p.4 commenting the propositions made during the meetings organized by McKinsey stressing that integration is the most efficient model for industrial productions like butter, milk powder and consumption milk)

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	<p>during the meetings organized by McKinsey to comment on its report) (Berque, Dams, and Godbille 1963, pp.22-23 commenting on the participation of dairy cooperatives and individual farmers in milk processing plants)</p> <p>- allows participation in a variety of milk processing models, including those with a focus on regional/niche productions (coexistence of models) (Goffin 1984, p.4 id.)</p>	<p>cooperation if there are differences in size between the partners (Le Sillon belge 1989 interview of the director of the dairy cooperative Chéoux)</p>		<p>- the transaction costs related to coordination and to the non-optimization of some operations can reduce the relative competitiveness of the model (McKinsey & Company 1984a, p.1 Extract attributed to the university professor of political economy Michel Quévit anticipating that coordination/cooperation between enterprises may not lead to an operational strategic management, as opposed to integration)</p>
<p>Model 3 : vertically integrated model</p>	<p>- diminishes the weaknesses in terms of negotiation and of cooperation identified in the previous models (McKinsey & Company 1984a, p.1 Extract attributed to the university professor of political economy Michel Quévit)</p>	<p>- the profitability of the plant can prevail over other strategic choices of milk processing that might be more profitable for the milk producers (immobility) (Comité</p>	<p>Presence of market opportunities for milk processed products where the investment is consequent and aimed for the long-term - way to protect the interests of</p>	<p>An integrated model with a scale inferior to similar actors may combine the triple vulnerability, in particular if the model is focused on products</p>

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	<p>- offers long-term stability and coherence in the interactions between milk collection, milk processing and commercialization, in particular for industrial products like butter, milk powder and UHT milk (Goffin 1984, p.4 id.)</p>	<p>ministériel de coordination économique et sociale 1975, p.3 accounts of the minister of economic affairs as to the interests of the cooperative owning a processing plant) (Interview p1 stressing the interests of the milkflows to the processing plants prevailed over other considerations of development)</p> <p>- potentially less attention for smaller milk processors oriented on regional/niche segments; (InterSud 1978, p.2, 3 words of Pierre Ska, future president of the cooperative Coferme, words of Francis Sobry, director of Intersud) (Dom Gueric Baudet 1978, p.2 considering that services for smaller-scale processing enterprises were lost in the merging operation due to a lack of concern of the merged dairy cooperative)</p>	<p>these investments by ensuring the supply of milk (Association pour le Développement Rural ASBL 1988 analyses the situation of the Walloon dairy industry in front of a market where the demand of milk is high) (interview d2)</p>	<p>with no particular differentiation factor :</p> <ul style="list-style-type: none"> - be a weaker competitor on the markets ; - not have the flexibility to consider a combination of outcomes - not cultivate a satisfaction and a long-term fidelity of farmers (Goffin 1984, pp.3 stressing the limits of the previous enterprises of vertically integrated models in the Walloon Region, that weren't specifically more competitive on the markets, and able to offer better farm-gate prices to farmers)
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		<p>- integration does not solve the issue of funds available for investments, in particular when the added value generated is limited and when farmers do not take the long-term objectives of the cooperative in consideration (interview p2 commenting on the lack of collective involvement in the agricultural world) (Inspectie van Financien - Departement Landbouw 1975 considering that the farmers are not concerned enough by and too distrustful towards the cooperative management, which may ultimately lead to cooperative failure on the long-term)</p>		
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3.2.2. SWOT analysis of horizontal coordination

In consolidation processes, whichever vertical coordination model is considered by the dairy cooperatives, joining efforts among dairy cooperatives presents the following added value:

- reach a size or a geographical scope that gives a strong negotiation power;
- reach a size that gives a higher participation potential in milk processing activities;
- acquire weight in front of a concentrated milk processing and distribution sector.

Dairy cooperatives may coordinate their actions without merging, as it was the case, for example, in the intercooperative models (point 3.1.2) and in the project of the cooperatives Chéoux and Coferme in the eighties (see chapter 2 point 1). Table 6 presents a SWOT analysis of the horizontal coordination model without merger and of the merger of dairy cooperatives.

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Table 6 : SWOT analysis of the models of horizontal coordination

Model	Strength	Weaknesses	Opportunities	Threats
Model 1 : horizontal coordination between dairy cooperatives without merger	allows every dairy cooperative to maintain an autonomy in decision and internal organisation while uniting efforts over some investments and over commercial outcomes (McKinsey & Company 1984, memo of the meeting of the 14th of May, page 2 - the memo reports that several participants stress the necessity to coordinate the efforts in order to invest on new markets and develop a joint marketing policy). An illustration of a model of coordination between different dairy cooperatives, including a central bureau for selling milk to other stakeholders, is presented in the note by Pierre Ska (1988) (Pierre Ska was president of the dairy cooperative Coferme). The added value of uniting efforts in front of other stakeholders (in particular	- risks of unbalance in the cooperation if there are differences in size between the partners (Association pour le Développement Rural ASBL 1989, p.2 analyses the situation of the cooperative Coferme and possible plans of milk delivery to an large-size dairy group) - Risk of lack of consistency in the strategies of the dairy cooperatives involved (related investment difficulties) (Coferme 1988a, p.2 observation attributed to the director of the dairy cooperative Chéoux about the lack of consistent strategies in a	Homogeneous cultural landscape, culture of dialogue and coordination, presence of structures of concertation (interviews u1, u2, d2, stressing the absence of these conditions in the Walloon Region, which hampers attempts at coordination between dairy cooperatives (Calicis 1988, p.3 stressing the lack of mutual trust among dairy cooperatives of the Walloon Region)	- the governance costs related to coordination and to the non-optimization of some operations can reduce the relative competitiveness of the model ; (Association pour le Développement Rural ASBL 1989, p.2. stressing that the coordination among dairy cooperatives leads to different operations of manipulations and movements of milk, which is costly and degrades the milk as raw material) - in case there is a lot of competition on the market for the milk (as raw material), or an unbalance in terms of size between the partners, trust and cooperation between

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	<p>at the level of product marketing) is stressed by the author.</p> <ul style="list-style-type: none"> - maintains a proximity between the cooperatives at local level and processors developing origin-linked products and products with a high added value (Goffin 1984, p.3, 4 stresses the added value of coordination (as opposed to merging) for added value productions/regional productions, for which independent (but coordinated) units may seize opportunities more easily) 	<p>case of coordination in the Region (that of the dairy cooperative Sud-Lait with the intercooperative structure Interlait)).</p> <ul style="list-style-type: none"> - costs related to the management of the cooperation (high transaction costs; - risks of disagreements over collective projects (costs of making bad strategic decisions over collective projects) (McKinsey & Company 1984, p.2 observed by the consultants of the Mckinsey firm in cases outside of the Walloon Region) ; Two illustrative cases of divergences between two dairy cooperatives associated in coordination projects – lack of strategic alignment leading to a 		<p>partners may be endangered (partners can become competitors and this could jeopardize the cooperation) (Coferme 1988b, p.1 report stressing that the high demand of milk on the markets generates movements of producers towards another dairy cooperative with whom they intend to develop a project of coordination) (Youcken and Demeur 1988 letter accounting for tensions between two dairy cooperatives having a coordination agreement, regarding the competition towards farmers for milk collection)</p>
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		conflict about the quality of milk as raw material (Dom Gueric Baudet 1978; Maître Renard 1981), and the quantities delivered and the payment of milk (Sibille 1988; Coferme 1989)		
Model 2 : merger of dairy cooperatives	Centralizes and simplifies decision-making and management at a larger scale (Trinon 1976, p.2) (McKinsey & Company 1984a, p.1 Extract attributed to the university professor of political economy Michel Quévit) – facilitates the development of a unified group strategy (McKinsey & Company 1984a, 2 analysis made by the consultants of McKinsey) (Goffin 1984, p.4)	the farmers may not feel they have a connexion to the cooperative dairy, be reluctant to consider investments and active participation, and not consider themselves bonded to the cooperative, if only by a milk delivery contract (Goffin 1984, p.3 internal report of the dairy cooperative Coferme reacting to the propositions of McKinsey) (Debergh 1992 stressing that a larger-size cooperative has to actively foster the fact that the	Landscape evolving towards consolidation pathways at milk processing level – homogeneous landscape in terms of milk production models (Goffin 1984, p.3 internal report of the dairy cooperative Coferme reacting to the propositions of McKinsey - as opposed to a landscape with a lot of subregional specificities)	Groups of farmers who may not feel represented by the management of the dairy cooperative may be tempted to leave the cooperative – this can be an issue in case there is an important demand on the market of milk (as raw material) (Dom Gueric Baudet 1978, p.1-2 reporting a lack of trust of farmers towards the newly merged dairy cooperative) (Coferme 1978, p.5-6 mentioning similar reports and the fact that farmers leave the newly merged cooperative for competitors from the neighbouring Flemish region) (anonymous (signed “Des

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		farmers must feel concerned and recognized by their dairy cooperative)		producteurs laitiers”) 1977, p.2 dairy farmers feeling unrecognized by the newly created merged cooperative and calling for a joint action of protest)
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Merging dairy cooperatives may have a positive effect on some weaknesses identified in the coordination model (lack of consistencies, transaction costs, issues of competition between partners). Conversely, merging, depending on the way it occurs, may jeopardize the sense of commitment of the farmer towards the dairy cooperative, as exposed in the previous chapter.

4. Discussion

This discussion aims at considering the strategic success and discussing the interplay with the farmer-members of coordination models in consolidation strategies, through a strategic management analysis approach. This approach aims at approaching the question of the effect of the consolidation strategy on the interplay with the farmer-members in connexion with the more general strategic added value of the consolidation model, as to account for the fact that no consolidation model develops into a vacuum but encounters failure or success in a given environment.

4.1. An approach of the added value of models grounded in relativity

Throughout the historical trajectories studied in the previous chapter, the Walloon dairy cooperatives acted as reciprocal competitors and yet they were all facing the same evolution of markets and consolidation of dairy cooperatives in neighbouring countries. What in other countries and time-contexts served as trigger for a better organisation (Lampe and Sharp 2014), revealed in the Walloon region the weaknesses inherent to the cooperation culture, worsening rather than resolving the intrinsic tensions related to the cooperative model.

We face, regarding the trajectories of the Walloon dairy cooperatives, a form of paradox. It seems that the stakeholders agreed on the need to go through consolidation strategies, but could not agree on the consolidation model. Additionally, beyond the projections made by the stakeholders, there is not enough evidence in the historical investigation that a consolidation model would bring a particular competitive advantage *as such* or help mitigate the intrinsic tension related to the dual role of the farmer as milk supplier and as principal investor and its effects on commitment and trust in consolidation strategies. In fact, it appears from

the SWOT analysis that this tension has effects – although of a different nature - on every model, also depending on the external factors of context.

Hansmann (1996) considers in coordination models the issue of governance costs, that are the costs of managing the coordination (making decisions and monitoring the managers) and the cost incurred in case of ill-management, “poor decision and excessive managerial discretion that result when collective decision-making or managerial monitoring are imperfect”. The most efficient organization is hence the one that manages, not only to optimize the transaction costs between the parties, but also to optimize its governance costs. As more recent managerial approaches of organizations stressed, beyond cost optimization, the adequate coordination strategy also considers whether the choices made offer the organization a competitive advantage in a particular context and given its own market approach (how the organization defines its own way of acting on the market), also taking into account strategic advantages like knowledge (Hobbs 2017).

Beyond any absolute judgement about a coordination model being “better” than another, our intention here is to analyse what the SWOT analysis reveals as to the vulnerabilities and strengths of every model. Following the above-described managerial approaches, we will consider for each model the importance of the transaction and governance costs, their strategic competitiveness and the relevance of their market approach in a given context, and how the model interplays with the tension linked to the dual role of farmer as milk supplier and principal investor. Table 7 represents the strategic features of the models of vertical coordination and Table 8 represents the strategic features of the models of horizontal coordination.

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Table 7 : Strategic features of the models of vertical coordination, considering the transaction costs (TC), the governance costs (GC), the competitive advantage in function of the context, the ideal market approach in such a model, and the interplay with the farmers

Model	TC	GC	Competitive advantage versus context	Market approach	Interplay with the farmers
Model 1 : no vertical coordination	++	-	High reactivity and optimization of milk allocation, favourable on a market with high demand for milk - situation may turn out difficult when the markets for milk as raw material are saturated	Management at ease with negotiation	Bringing out success from negotiation contracts will satisfy the farmers and ensure their commitment to the model
Model 2 : vertical coordination through participation	+	+	Diversity of the participation and milk allocation, provided there are adequate institutional frames to support structural of dialogue and concertation across the supply chain, and a balance of size with the partners	Negotiation abilities (guarantee the farmers' interests in the participatory agreements) and ability to consider long-term development goals in a diversity of projects	Satisfaction of the farmers dependent upon the confidence in the participation plans and their outcomes ; In case there is a low commitment of farmers to the model, the investment issue might be a problem

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<p>Model 3 : vertically integrated model</p>	<p>-</p>	<p>++</p>	<p>Minimal transaction costs on long-term development schemes; maximal guarantees in terms of milk allocation, whatever the context on the market of milk (as raw material)</p>	<p>Long-term investments in processing plants</p>	<p>The model relies strongly on the willingness of farmers to invest on the long-term ; The model offers a sense of security to farmers as the milk processing plant will process their milk ; The model may be less flexible for new opportunities of development, given the long-term investments done, hence farmers might express dissatisfaction as to the lack of flexibility in terms of milk allocation</p>
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Table 8: Strategic features of the models of horizontal coordination, considering the transaction costs (TC), the governance costs (GC), the competitive advantage in function of the context, the ideal market approach in such a model, and the interplay with the farmers

Model	TC	GC	Competitive advantage versus context	Market approach	Interplay with the farmers
Model 1 : horizontal coordination	NA	++	Maximizes the autonomy of action and investments of the partners but may generate investment and coordination issues on long-term large-scale projects	Consideration of dairy cooperatives as autonomous business partners who bundle their efforts on strategic aspects	Ideal model to accommodate the regional or sub-regional pathways of development ; Requires that farmers consider other cooperatives not only as competitors but also as partners; this might be difficult in a context where the tensions in terms of milk collection are high (where dairy cooperatives act as competitors to collect milk) The model does not guarantee that farmers will develop a more favourable attitude towards investments

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Model 2 : merger	NA	+	Optimized model for long-term large-scale strategies – but some investments in more local schemes may lose significance	Optimization of the strength in investments and negotiation while minimizing the governance costs	Needs good representation mechanisms to guarantee that farmers feel involved/recognized in the cooperative’s strategic decision-making and develop an attitude favourable to involvement (including on investments)
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4.2. A consideration of the “best” consolidation model to be grounded into context

In terms of horizontal coordination, we may note that the model of horizontal concertation, rather than merger, seems *a priori* more adapted to a landscape with a lot of regional heterogeneity in terms of milk processing features, because it might allow a partnership allowing an autonomy of investments in different milk processing strategies. Regarding the Walloon Region, we can relate to the plan proposed by one dairy cooperatives, in the 80s, of multiple participations and coordination of the milk collection between dairy cooperatives. Burgelman’s (2002) accounts for the impact of decentralized management on the ability to generate and explore a greater diversity of opportunities (Burgelman 2002; Germain and Ngijol 2010). However, the costs of ownership linked to this model might turn out high if/when the parties engaged do not manage to reach agreements (regarding mutualisation of services or investments and regarding cost-sparing coordination, for example of milk processing). Additionally, let us note the vulnerability of this model

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to the context of milk collection – where dairy cooperatives who are partners might end up being competitors (incidentally, this is stressed by Ciliberti et al. (2020) as a feature of hybrids). One important limitation and point of concern, in the success of hybrids, hence resides in considering whether the local context would allow such a model to develop successfully. In any pathway of transition, adaptation to “specific local institutional settings” (Vermunt et al. 2020) has to be considered, also when considering the mobilization of hybrids as solution for governance. In the Walloon dairy context, the conditions of implication of farmers and of confidence and trust between cooperatives weren’t met to see emerge this ecology of opportunities based on a wide horizontal coordination (Germain and Ngijol 2010).

The specific challenges of the relationship with the farmer-member also explains, in the case of the Walloon dairy cooperatives, why a transition from a horizontal coordination in intercooperatives to a merger of dairy cooperatives, like the one operated in Sud-Lait, at the time, wasn’t successful either. The issues linked to horizontal coordination between partners were less stringent, but the lack of commitment of the farmers towards the cooperative was an issue (see chapter 2, part 1). Filippi, Frey and Torre (2008) point out, regarding upscaling strategies that include mergers of dairy cooperatives, the issue of the services granted to the cooperative members. The authors stress how the fact that maintaining an equivalent level of services to the farmers is a source of success of upscaling operations. Hansmann (1996) identify an issue related to monitoring in agricultural cooperatives of growing size covering a large region. “Where a cooperative covers a large region, it is both possible and a common practice to structure the cooperative in ways that continue to permit active and informed member control. For example, many large cooperatives in the United States, including those that handle basic grains such as wheat, have a federated structure in which a number of small and highly responsive local

cooperatives serve as members of regional or national cooperatives. Similarly, in many cooperatives, directors are elected by district rather than at large. This was partially resolved in Sud-Lait at the time, by grounding five different structures of milk collection, equally represented in the management of the dairy cooperative (De Herde 2020).

Regarding vertical coordination, let us stress here how the success of the coordination models is grounded in the situation of the market of milk as raw material, and in the management of the balance of power among partners. Our findings align, in this regard with Hooks et al. (2017) and Contini, Marotta and Torquati (2020). In terms of management of the balance of power among partners, scale does not matter less in the coordination model than in the vertically integrated model. In the vertically integrated model, scale matters because of the economies of scales on the processing plants, and in terms of marketing power. In the coordination configuration, scale matters mainly regarding balance in terms of negotiation (Contini, Marotta, and Torquati 2020).

Regarding the market of milk as raw material, our historical investigation concerns a timespan where tensions on that market were high and competition for milk was strong. Let us consider the situation of each model of vertical coordination in that context:

- A direct link to a milk-processing plant, especially one with a low profitability margin, places a dairy cooperative in a situation of weakness, as the optimization of use of the processing plant is a guarantee to maintain a minimal profitability. This can induce, in case dairy farmers are prone to shopping attitudes (which was the case in the Walloon region) the vicious circle of paying the farmers a higher price for milk to the detriment of the investment capacity. Any alternative option (like temporarily reducing the use of the tools while selling milk on the markets to other industrial

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operators) might not be realistic in case the tensions related to previous investments are high (financial charges, amortization plan). The effects of this situation on the milk quality has been denounced by some interviewees (oral sources – see (2020), as farmers know the dairy cooperative needs their milk and will take it anyway, there are little incentives to watch out for quality;

- Decoupling the milk collection from industrial processing (de-integration) can place a dairy cooperative in a situation of strength, provided the management has the ability to conduct either successful negotiations with industrial operators and/or ensure participations in industrial plants. In this configuration, the costs of transaction are high (because there is more negotiation going on) and there is an issue related to the competences of the management in this regard. This configuration allows the dairy cooperative to allocate its milk regardless of the considerations related to processing tools, including in small-scale high added-value channels. The participation in industrial plant can constitute a form of insurance in case there is a change of conjuncture on the market of milk as raw material. This configuration allows in theory more interactions between farmers' dairy cooperatives and private milk processing tools operators, both acting according to their own rationality:
 - The dairy farmers allowed to seek the allocation of their milk to the schemes that are the most profitable;
 - The industrial operators dimensioning and running plants according to market perspectives rather than according to the volume they expect to receive from the farmers – with the possibility to see a constellation of small-scale milk processing projects emerge as well.

Whether private operators of milk processing may play a role in an ecology of opportunities of milk processing for dairy cooperatives remains an open question. In the history of the Walloon cooperatives, we find only few accounts of interactions between dairy cooperatives and private operators. Private operators were scarcely present, except on niche market in the province of Hainaut, one operator in the province of Luxembourg. We only find private industrial investments in the province of Liège. In particular, it is striking that the relationship between dairy cooperatives and private milk processing operators in the Walloon region is never mentioned or explored. Even, it was fought against at the beginning of the seventies when foreign private interests wanted to take over an intercooperative's processing plant (De Herde 2020). Let us note, however, that the Walloon Region, due to its structural characteristics of dairy production (see chapter 2), was not specifically attractive for private investors in an industrial configuration. Additionally, given the features of investments in processing plants in an industrial configuration (site-specific, risky, long-term, low profitability – with milk being a standard raw material), investments by the dairy cooperatives rather than by private operators is to be expected from a transaction costs' approach (Hansmann 1996; Williamson 1987; Ruzzier 2009). As from the 80s, with the evolution of consumption patterns towards local and origin-linked product, a configuration with more private investors in milk processing plant, could however make sense (Ruzzier 2009). Such a configuration has necessarily to be accompanied by a focused entrepreneurship around local productions and investments in brands and specific marketing.

5. Conclusion

The choices made in the Walloon Region and the adverse effects experienced throughout their consolidation strategies, hint at the fact that there are a variety of coordination options available. None of these choices is entirely preserved from, or mechanically alleviates the

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challenges related to the management of the dual role of the farmer as milk supplier and as principal investor. None of these choices presents a strategic profile that could be perceived as best in all market circumstances, cultural and institutional contexts. The key to mitigating the possible lock-ins to specific development pathways related to the farmers' commitment and the cooperatives' cooperation lies primarily in the awareness of the adverse effects of each model on these two dimensions, and more generally on the specific added value of each model in a given context. Consecutively, the success of consolidation and cooperative development processes also lies on the proactivity of agents in defining their model on these bases, and managing them accordingly.

Chapter 4 – PAPER - Coexistence of
cooperative models as structural answer to lock-
ins in diversification pathways: the case of the
Walloon dairy sector

Challenges of collective agency in the Walloon dairy sector

Coexistence of cooperative models as structural answer to lock-ins in diversification pathways: the case of the Walloon dairy sector

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Abstract

Drawing on an analysis of the Walloon dairy sector, this paper aims at bringing novel insights on the coexistence issue in agrifood transition studies. Whereas most studies explore the coexistence of farm models, our study focuses on value chains, in particular on cooperatives. In the Walloon Region, new dairy cooperatives emerged, as substitute or as complement to the incumbent vertically integrated dairy cooperatives. This paper focusses on the coexistence of dairy cooperative models as enabler of transition towards product diversification. Dairy cooperatives are hybrid actors: economic agents on the market on the one hand, structure of collective agency on the other hand. Williamson's framework of *New Institutional Economics* acknowledges that the allocation of resources by cooperatives depends on governance processes and on the wider institutional context in which the cooperatives evolve. Within the broader frame of the *Multi-Level Perspective*, this approach allows to consider the socio-technical coherence in which the cooperatives evolve, the effects of this coherence on their pathways of development and the complementarity of the cooperative models. This qualitative analysis builds on semi-directed interviews with actors of the Walloon dairy sector. The results outline distinctions between the mainstream (vertically integrated) dairy cooperatives and the new cooperative models in market approach, definition of milk quality, distribution of added value, governance, and interactions with partners. Both models evolve

within a distinct socio-technical coherence, holding, in the case of the mainstream dairy cooperatives, lock-ins to diversification related to the relationship with the farmers-members and the milk they produce in the industrial vertically integrated model. The new cooperative models circumvent these lock-ins through de-integration and externalization of initiatives, remuneration and risk. They allow specific groups of actors – still related or unrelated to the mainstream dairy cooperative - to explore new market pathways in accordance to their potential, and to mutually agree on criteria qualifying milk. This research draws the picture of a possible reconfiguration of the dairy landscape towards a more diversified ecosystem of actors, and invites to consider structures of governance in collective action as a cornerstone-issue, because of their significant role in terms of enablement, co-existence and complementarity throughout the transition process.

Keywords: dairy cooperatives, coexistence, value chain, lock-ins, pathways of diversification, Structures of collective agency

1. Introduction

A majority of European dairy cooperatives are vertically integrated (Demirbas et al. 2004). Many of these vertically integrated dairy cooperatives increased their investment and export capacity over the last 20 years through upscaling and the constitution of multinational dairy groups (Mauget 2008; Filippi, Frey, and Mauget 2008; Chaddad and Cook 2004; Juliá-Igual, Meliá-Martí, and García-Martinez 2012). In this configuration, initial cooperative goals of social utility (Marcis et al. 2019; Ajates 2020) may lose their significance at the local or national level in favour of larger scale efficiency and profitability logics (Koulytchizky and Mauget 2003). In the Walloon Region, new dairy cooperatives recently emerged and developed as substitute or as complement to the incumbent vertically integrated dairy cooperatives. Building on the presence of

distinct cooperative models, this paper focusses on the issue of their coexistence. Through analysing which possible reconfiguration of the dairy landscape their coexistence entails, this paper aims at stressing the importance of governance structures as enabler of transition pathways.

Coexistence is an increasingly investigated issue within transition studies on food production. However, most studies restrain their approach to analysing how different agricultural models relate, with an emphasis on farms rather than on other value chain's actors (Saux-Nogues 2018; Dumont, Gasselin, and Baret 2020; Polge, Torre, and Wallet 2018; Cayre et al. 2018; Plumecocq et al. 2018; Elzen and Bos 2019). The objective of studies on co-existence is to understand how dynamic and progressive interactions may define pathways of transition, as opposed to radical ruptures (Saux-Nogues 2018; Touzard and Fournier 2014). In that line of study, approaches emerging from Transition Management and Sustainable Niche Management (Elzen and Bos 2019; Ingram et al. 2015) and recent studies on Agricultural Innovation Systems (Turner et al. 2020; Pigford, Hickey, and Klerkx 2018) focus, for example, on interaction dynamics between agents. Their objective is to understand how agricultural innovations anchor themselves in the incumbent agricultural regime. This focus on interactions between agents necessarily implies an attention to the micro-level of the enacted trajectories, at a scale that differs from the Multi-Level Perspective's global approach on transitions (Geels 2020).

Agency, or the capacity to (inter)act, is indeed multidimensional and can be approached through various theoretical lenses. (Geels 2020). Many authors, within and beyond agricultural studies, hence mobilized the *Multi-level Perspective* in combination with a series of theoretical approaches : discourse analysis (Upham et al. 2015; Rosenbloom, Berton, and Meadowcroft 2016; Buschmann and Oels 2019; Rauschmayer, Bauler, and Schöpke 2015); social practice theory (Hargreaves, Longhurst, and Seyfang 2013) ; network studies (Ingram et al. 2015; Bui et al. 2016; Diaz

et al. 2013; Darrot et al. 2015; Grin, Rotmans, and Schot 2011; Elzen, van Mierlo, and Leeuwis 2012); institutional approaches (Smink et al. 2015; Fuenfschilling and Truffer 2014; Geels et al. 2016); convention economics (Dumont, Gasselin, and Baret 2020) ; strategic management (Marsden 2013; Berggren, Magnusson, and Sushandoyo 2015; Elzen et al. 2012).

The combination of the Multi-Level Perspective with other theoretical frames has been theoretically discussed (Rauschmayer, Bauler, and Schöpke 2015; Pesch 2015; Hargreaves, Longhurst, and Seyfang 2013; Fuenfschilling and Truffer 2014; Geels 2020) as a way consider how interacting agents co-evolve with shifting meanings and institutions in transition pathways. These combinations allow to refine the comprehension of the lock-ins hindering agency in a stabilized regime, and interactions between agents towards patterns of coexistence (Buschmann and Oels 2019; Malone and Gomez 2019; Plumecocq et al. 2018). Although some authors state that the Multi-Level Perspective alone falls short of conceptual tools to approach the interactions between agents as drivers of change (McMeekin and Southerton 2012; Diaz et al. 2013; Hassink, Grin, and Hulsink 2013; de Haan and Rotmans 2018; Pesch 2015; Whitmarsh 2012; Hargreaves et al. 2013), Geels (2020) stresses how the underlying theories of the Multi-Level Perspective, namely the Social Construction of Technology, evolutionary economics and the Neoinstitutional Theory, encompass a focus on agency. These three theoretical fields are able to cover interactions between agents and co-evolving institutions (the formal and informal structures and rules framing the actors' behaviours and actions) within a material context, and hence ground a unique multi-dimensional model of agency.

This conceptual complexity in portraying interactions between agents in a broader context may explain why there are but a few studies which have explored the issue of coexistence beyond farm-level to focus on the level of value chains, and particularly the relations between firms (Markard, Raven, and Truffer 2012; Magrini and Duru 2015). At that

level of analysis, coexistence results from a complex evolution drawing on multiple interactions between actors from the incumbent regime and from alternative regimes, and an ensuing co-evolution of the institutional landscape (Magrini and Duru 2015).

Bearing these considerations in mind, the recent evolutions of the Walloon dairy cooperatives constitutes a relevant object of analysis for bringing insights with respect to the institutional dimension of the coexistence issues at the level of the value chain. It can indeed show how a combination of different cooperative structures may support a transition process (i.e. towards the diversification of dairy productions in this case).

The Walloon Region is the Southern part of Belgium and spans over about 17000 square kilometres. The territories of dairy production (about 1/3 of the territory) are mainly situated in the South-West and East of the Region. Pastures represent from 70% to 95% of the agricultural land in these territories (Fourrages Mieux ASBL 2016; SPW Agriculture, Ressources naturelles et Environnement 2020a). The 2937 dairy farmers of the region produce a total amount of 1280 million milk litres (Celagri 2019; Collège des producteurs 2020). Five dairy cooperatives are historical players of milk collection in the region, of which four went through processes of consolidation (defined, drawing on Shields (2010), as the shift to fewer and larger firms) (De Herde 2020). They followed thereby a trend of structural adaptations to face the globalization of markets and the increasing concentration of the distribution sector (Juliá-Igual, Meliá-Martí, and García-Martinez 2012; Filippi, Frey, and Mauget 2008). The historical cooperatives collect up to 97% of the milk produced (Petel, Antier, and Baret 2019; DGARNE 2007). These historical dairy cooperatives process the milk collected in milk powder (41%), butter (27%), cream (19%) and UHT consumption milk (12%) - (based on Maquet (2012) and the conversion equivalents of Meyer and Duteurtre

(1998)). Ten percent of the milk collected by the historical dairy cooperatives is sold to milk processors, of which 4% is processed in cheese.

In the two last decennia's, Walloon dairy landscape saw the emergence of three new cooperative models. These new cooperative models aimed at ensuring the farm a higher revenue through diversification towards high added value productions on the national market. We understand diversification here as the term is usually understood in agri-food studies, that is the extension of the range of commodities produced (Heck et al. 2020; Stefan and Imre 2018), in particular by evolving towards more highly valued products (Memedovic and Shepherd 2009; FAO 2004). In contrast with other initiatives aimed at exploring short value chains for local milk processing initiatives, these three new cooperative models specifically target the same distribution channels as the historical dairy cooperatives. They thus offer a potential for diversification at another scale than the localized short value chain initiatives. In addition, these new cooperative models do not necessarily act as substitutions but also as complement to the incumbent cooperatives. The presence of the new cooperative models in the Walloon Region thus raises questions related to their role in the futures trajectories of the dairy sector, and in particular, in terms of coexistence of different cooperative models and processing pathways. Of particular relevance for the Walloon Region, is the possible diversification of productions away from consumption milk, milk powder and butter, and towards a larger variety of dairy products. The region indeed holds a diversity of dairy farm models, from intensive maize and grass silage based production to extensive pasture-based models (Petel, Antier, and Baret 2019; Lebacq 2015). A variety of milk processing models based on different justification systems may act upon and further support this diversity of farm models (Touzard and Fournier 2014; De Herde, Maréchal, and Baret 2019; Reviron and Python 2018; Perrot et al. 2017)

In the recent literature on transitions in the dairy sector, attention has been devoted to the role of dairy cooperatives, and more broadly of dairy industries, in transition processes. Authors focused on their interactions with other stakeholders and the institutional changes needed to address issues of the environmental impact of farming systems (Runhaar et al. 2020; Turner et al. 2020; Farstad, Vinge, and Stræte 2020; Vermunt et al. 2020). Authors also approached how medium sized dairy cooperatives may support a regional farming model through specialization in added value productions (Heidkamp and Morrissey 2018). A lot of research articles focus on the evaluation of the sustainability of cooperative models, including on social aspects (Marcis et al. 2019; Venn et al. 2006; Ortmann and King 2007; Bijman and Wijers 2019; Forney and Häberli 2017). Bijman and Wijers (2019) address the question of the inclusiveness of agricultural cooperatives towards smallholder farmers. Forney and Häberli (2017) analyze the enactment of cooperative values of democracy, solidarity and autonomy, in the context of the above-described cooperative model shifts. Forney and Häberli (2017) partially hint at the possible coexistence of various cooperative models by stressing that interdependency between different cooperative models may be successfully grounded in balanced economic relations and a shared enactment of cooperative values. However, we only found one example (Alavoine-Mornas and Madelrieux 2015) considering the coexistence of cooperatives of different nature as pathway towards an increased sustainability of the agro-food landscape. The authors describe a mutually beneficial agreement of milk collection and allocation between a consolidated dairy cooperative oriented towards international markets and a cooperative of local scale, ensuring the survival of local transformers and of the extensive pasture-based farm models on which they rely.

This research aims at contributing to the study of coexistence at the level of the value chains. By comparing the socio-technical coherence of the cooperative models present in the Walloon Region, the goal is to

analyse how the internal coherence of distinct but complementary forms of cooperative models may shape the transition pathways towards a more diversified set of dairy productions.

2. Theoretical background

Our concern, regarding the contribution of cooperative models to transition pathways, is grounded in a systemic consideration of the sustainability of the agri-food sector. This systemic approach interrogates systems' functions as emerging from a complex network of mutual influences (P. B. Thompson 2007), considers the contribution of all actors of the agri-food sector to future configurations of the agri-food systems, beyond innovative niches (Gaitán-Cremaschi et al. 2019), and focusses on the proactive construction of the future that the agri-food system may entail (Bawden 2012; Soosay and Hyland 2015; P. B. Thompson 2007). Multi-tier approaches of value chains, in particular, like one analysing the co-existence of different cooperative models in a given landscape, offer the added value of considering interconnected relationships and what these interconnections shape as development perspectives, including in terms of sustainability (Soosay and Hyland 2015).

Dairy cooperatives are an element of the value chain. Drawing on Trienekens (2011), a value chain can be defined as the organization of the relationship between the farmer and other stakeholders leading to the creation and marketing of food products and the redistribution of the added value generated through this process. Much focus is set on the approach of value chains under the Global Value Chain approach, that is by considering value chains activities as an inter-organizational network built around a product, gathering consumers, firms and a state (or a public authority) within the global economy (Bencharif and Rastoin 2007; van Bers et al. 2019; Gereffi, Humphrey, and Sturgeon 2005). Within that encompassing framework, it is possible to zoom on specific aspects characterizing this inter-organizational network: the mechanisms of

coordination on product specifications and quality, the governance of interactions (the rules and enactment of decision and coordination processes on resources allocation), and the network features and issues linked to interdependencies between actors of the value chain (Trienekens 2011).

Whereas governance is an issue that is increasingly considered at the level of the global value chain (van Bers et al. 2019), governance is also an issue that arises as soon as a dimension of collective action is present at any level of the value chain, with interactions between partners that go beyond spot market interactions (Hobbs 2017). It is the case regarding cooperatives. On one hand, dairy cooperatives are a value chain agent interacting on the markets with a requirement of economic profitability (Hansmann 1996; Schneiberg, King, and Smith 2008; Forney and Häberli 2017; Chlebicka, Falkowski, and Lopaciuk-Gonczaryk 2017). On the other hand, dairy cooperatives are a legally framed structure gathering individual agents, the farmers, members of the cooperative, around a series of shared goals. The former means that the pathways of evolution are under the influence of the strategic choices made by the members of the cooperative in terms of resource allocation and investments (Burgelman 2002). The latter means that the decision-making process within the cooperative and the way the farmers-member interact with the cooperative (Grandori 2017) may influence these choices (Cook and Iliopoulos 2000). As stressed by Grandori (2017), how farmers relate to the cooperative, interact as milk supplier and make decisions as cooperative member ties indeed more with the features of a democracy than those of a hierarchy.

Governance models within an organization or defining the interactions between organizations in a value chain, can be characterized alongside a continuum ranging from coordinated networks of partners (qualified as “hybrids”) to hierarchies (the ‘classic’ definition of firms where internal relations are coordinated by authority relations)

(Grandori 2017; Ménard 2017). Predictive models define which type of governance model may prevail (Gereffi, Humphrey, and Sturgeon 2005; Williamson 1987; Ruzzier 2009), from “arrangements in which parties interact mainly through the price mechanisms (spot markets)”; hybrids where partners interact on a long-term basis and develop “room for mutually negotiated adaptation”; to “integrated organizations (hierarchies) within which adjustments are made in last resort through forms of command and subordination” (Ménard 2017). These predictive models are “buyer-driven”, in the sense that they rely mainly on a prediction of how a buyer relates to its suppliers, based on the nature of the assets exchanged between parties, the complexity of specifying and codifying these assets and the capability of suppliers to answer the needs of their partners. Let us notice, however, that agri-food cooperatives are typically also producer-driven models, where farmers gather to circumvent monopsony of buyers, increase their marketing strength and benefit of possible advantageous tax and subsidies schemes for investment (Hansmann 1996). It is often stressed, additionally, that no governance model develops and evolves outside of a given institutional context (formal and informal rules) and the influence of a given social and political environment (Ménard 2017; Hansmann 1996; Trienekens 2011).

The perspective of this paper is to consider the studied dairy cooperatives as structures of collective governance, but also as elements of the dairy value chain. We thus acknowledge that any of the above-described dimensions (product specification and quality, governance and network aspects) do not develop in a vacuum and may face constraints (e.g. of access to the markets, access to infrastructures and resources). Drawing on the analytical framework proposed by Trienekens (2011), the results section hence provides first a characterization of the cooperative models present in the Walloon Region, highlighting the constraints they may encounter and the way they answer these constraints.

The aim of this paper is not only to characterize these cooperative models as elements of the value chain, but also to draw from that micro level of analysis significant insights on macro-scale transition pathways. To this end, the results are discussed resorting to a crossover between the *Multi-Level Perspective* and a framework developed in the research school of New Institutional Economics (Williamson 2000; 1998). This framework considers the embeddedness of the strategic decisions of economic agents within the realm of their governance mechanisms and in the wider context of formal and informal institutions in which the agents evolve. Regarding the studied cooperative models, this framework considers how strategic decisions and approaches of quality, as well as the generation and distribution of added value may all be under the influence of governance mechanisms - which, in the case of the dairy cooperatives, entail interactions with the farmers-members, as exposed hereabove. Furthermore, this framework allows to consider how the wider context of formal and informal institutions (the “rules and rationalities guiding behaviour” (Runhaar et al. 2020)) - that we may grasp through the analysis of the constraints the cooperatives face – influences and limit their strategic decision process. This framework hence ties the way the cooperatives evolve at their own micro-level with the broader socio-technical coherence in which they evolve. From a *Multi-Level Perspective*, this gives room to consider, from, lock-ins hindering macro-level value chain pathways of development. This broader socio-technical coherence and the above-mentioned appreciation of the broader networks with which the cooperatives interact, will ultimately reveal the extent of complementarity of the cooperative models for future pathways of development.

3. Material and Methods

The above-described theoretical approach logically entails a research methodology grounded in a qualitative engagement with stakeholders co-

creating research material “as to provide an opportunity to analyze supply chain phenomena in the context within which they are constructed” (Touboulic, McCarthy, and Matthews 2020).

Our research is hence based on semi-directed interviews with people from the Walloon dairy sector involved or connected to the dairy cooperatives. By “connected”, we mean actors involved in common projects with the cooperatives (researchers, feed producing firms). We also mean the publicly funded organizations advising dairy farmers and actors of the dairy value chain in accordance with public policies. We did not include representatives of the retail sector, as the sector was not involved in any of the new cooperative models studied. We hence considered retail as an element of the landscape in which the historical dairy cooperatives and the new cooperative model evolved. We also considered the institutional frames to which the dairy cooperatives were confronted as an element of the landscape, hence did not extend our interviews to policy-makers at regional level, beyond the publicly funded organizations with whom the dairy cooperative members interact regarding the implementation of public policies (that may influence them). We based our investigation on 24 interviews with actors of the dairy sector (we further define as “interviewees”), between September and December 2017:

- Six actors from publicly funded organizations (sp1, sp2, sp3, sp4, sp5, sp6): national food security services (sp2), Walloon agricultural counselling services (sp1, sp4, sp6), regional support of value chain initiatives (sp3), local development funded on European funds (sp5).
- Three actors from the feed sector (f1, f2, f3), of which two in value chain projects with the historical cooperatives (f1) or with new cooperative models (f2).
- Two representatives (cdc1, cdc2) of the two historical dairy cooperatives collecting respectively 62 % and 25 % of the milk

produced in the Walloon region, namely the *Laiterie des Ardennes* and *Arla*;

- Four actors active in the new cooperative models (ndc1, ndc2, ndc3) as members of the board or as cooperative member (ndc3bis) ;
- One researcher active in a value chain project with a historical dairy cooperative (ir1) ;
- One representative of the economic interest group of cheese processors working with raw milk (cp1) ;
- Four actors from the farmers' union (u1, u2, u3, u4), of which one from a union of organic farmers (u4), one from a representation of the dairy farmers at European level (u3) ;
- One manager of agricultural credits in a bank covering 50 % of the market of agricultural loans in the Walloon region.

Some of the interviewees presented profiles crossing the different categories, which added to the interest of interviewing them. The interviewee u4 was active as farmer in a project of specific value chain developed by a historical dairy cooperative in the past and is now member of the *Biomilk* cooperative. One administrator of a new cooperative model (ndc1) is also active in the representation of the dairy farmers at European level (alongside u3) and delivers its milk to another new cooperative model (*Biomilk*).

Additional research material consisted of talks and discussions at conferences in Belgium and abroad, of which a discussion with the CEO of the French dairy cooperative of the region of Arras, in France (cdc3), in the frame of a conference about cooperative models, organized at the annual general assembly of the cooperative on the 5th of June 2018. Although not specifically created as research material for this research, the content of these discussions was relevant to approach our object of study and in particular, the broader network with whom the dairy cooperatives interacted.

We transcribed the interviews and the recorded conference extracts in the software for qualitative management *Nvivo*. We defined codes to identify and compare the features in the different models, in terms of justifications, governance practices and institutional rules, sets of interactions and market strategy.

4. Description of the studied cooperative models

This section outlines the main features of the studied cooperative models. From the five historical cooperatives, we considered two historical cooperatives, which are the two main collectors of the region (respectively 20% and 70% of the dairy farmers) and account together for more than 85% of the milk collected. They both represent the vertically integrated cooperative model to which the historical cooperative models mainly correspond. We, from now on, refer to these cooperatives, and to the model, they represent, as the “mainstream cooperatives”.

Arla is a cooperative European scale collecting the milk of 10300 farmers in the Netherlands, Belgium, Luxembourg, the UK, Germany, Denmark and Sweden (Arla Foods 2019c; 2019a). The cooperative owns various processing plants, of which none in the Walloon Region. The *Laiterie des Ardennes* (2000 farmers) currently collects 30% of its milk outside of the Walloon Region, and owns one processing plant in the Walloon Region.

Figure 35 describes the configuration of the new cooperative models, compared to the mainstream cooperatives. All new cooperative models of the Walloon Region, targeting the same distribution channels as the historical dairy cooperatives, are represented and studied. As stressed in the introduction, this study purposely focuses on these initiatives because they offer a potential for diversification at another scale than the localized and shortened value chains.

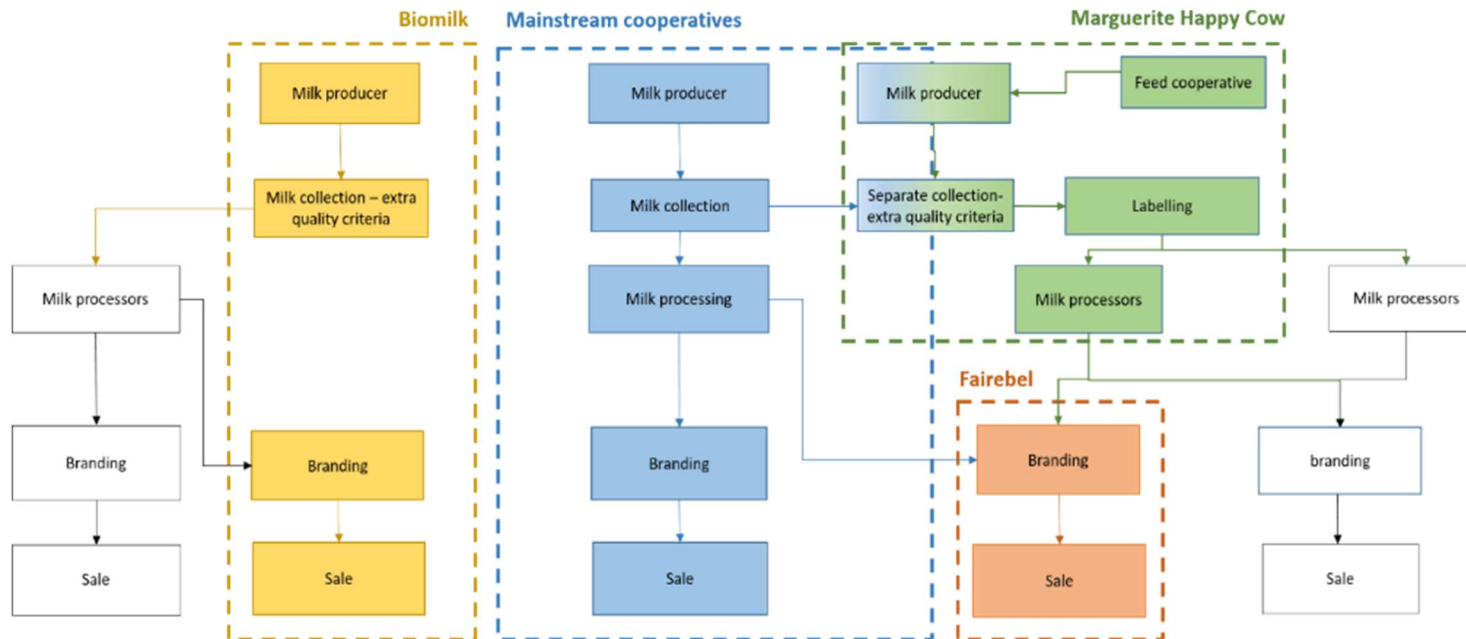


Figure 35 : Graphical overview of the studied cooperative models – the arrows represent the product fluxes

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Biomilk, is a cooperative of 39 organic dairy farmers, and acts as a substitute to the mainstream cooperative model. The cooperative, however, does not own any milk processing plant. The cooperative negotiates contracts with milk processors, on the base of stricter requirements in milk quality than the organic norm (control of butyric acid spores, more frequent milk collection, and attention to the feeding of cows that influences the taste of the milk). The cooperative also owns its own brand, *Bioterroir*, for which some milk processors act as subcontractors.

The *Marguerite Happy Cow* and *Fairebel* act as complementary structure to the mainstream cooperative model: the farmers remain members of the mainstream cooperatives, and are additionally members of the new cooperative models.

In the *Marguerite Happy Cow* cooperative model, the mainstream cooperative operates the separate milk collection of the farmers - members for the new cooperative model (10 so far), delivers to the processors of the new cooperative the quantities they need, and uses the surplus. The cooperative labels the milk of these farmers, based on specific criteria linked to the farm model and the cow feed (GMO-free – ration with 70% of grass or grass-based fodder. Feed complements have to originate from maximum 300 km distance). Processers use the labelled milk and label their products accordingly.

The *Fairebel* cooperative (500 members) acts as buyer of products from the mainstream cooperative or other processors, as would any other brandholder do. For instance, *Fairebel* is not a member of the *Marguerite Happy Cow* cooperative but also buys products from processors using that milk. *Fairebel* hence uses the *Marguerite Happy Cow* label on these products. The *Fairebel* members remain members of a mainstream dairy cooperative to which they deliver their milk.

So far, the new cooperative models are marginal in terms of quantity of milk collected. They are not active outside of the national market. None of these new cooperative models owns a milk processing plant. Table 9 summarizes the main descriptive features of each studied cooperative.

All three new cooperative models emerged from a will to broaden the scope of dairy products and offer higher revenue to their farmer-members through diversification towards high added value productions on the national market. *Fairebel* emerged after the so-called dairy crisis of 2009 where farm-gate milk price drops generated protests from farmers and made them question the strategic power they had in mainstream dairy cooperatives (see Feyreisen and Mélard (2014) for more details about the negotiation process with the mainstream dairy cooperatives). *Marguerite Happy Cow* results from a publicly funded project aiming at developing new processed dairy products using pasture-based milk (Wagralim 2019). *Biomilk*, similarly to *Fairebel*, was created to allow organic farmers who had distinctive pasture-based profiles and practices meeting cheese-processing requirements (see De Herde et al. (2019) for more details about these requirements), to market their milk separately from mainstream cooperatives.

Table 9 : Characterization of the studied cooperative models, in terms of membership and activities

	Mainstream cooperatives		New cooperative models		
	Laiterie des Ardennes	Arla	Fairebel	Biomilk	Marguerite Happy Cow
Number of members in the Walloon Region	2000	600	500	39	10
Date of foundation of the cooperative	2001-from the merger of two historical	Merger of a Walloon dairy cooperative existing since the 1930' with	2009	2002	2017

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	cooperatives (active since the 1970' and before)	Arla (existing since 1880) in 2014			
Type of members	Farmers	Farmers	Farmers, consumers	Farmers	Farmers, milk processers, feed cooperatives and consumers
Proportion of the milk produced in the Walloon region processed	60%	30%	Less than 1%	Less than 1%	Less than 1%
Location of the farmer members	The whole Walloon region; recently expanded towards milk producers outside of the Walloon Region, who produce 30% of its milk	10300 farmers in the Netherlands, Belgium, Luxembourg, the UK, Germany, Denmark and Sweden – Walloon farmers mainly situated in the province of Liège	The whole Walloon Region	The whole Walloon Region	Province of Liège (East of the Walloon region)
Milk processing plant	Unique processing plant of consumption milk, butter and milk powder.	None in the Walloon region – multiple milk processing plants in Europe and outside of Europe	No	No	No

5. Results

In order to characterize the above-described cooperative models within the Walloon dairy value chain, this section considers successively (1) the constraints they identify on the markets and the impact of these constraints on their market strategy (2) the definition of quality, the related generation and distribution of added value (including in relation with institutional frames) (3) their governance features (4) how the cooperatives relate to the broader networks with which they interact.

5.1. Approach of the market

Interviewees from the mainstream cooperatives (cdc1, cdc2), from one dairy industry (di1) and from the new cooperative models (ndc2, ndc3) tend to align on the analysis of the constraints they face on the markets. Mass retail is concentrated and hence uses its position to diminish the profit margins of processors (cdc1, cdc2, di1, ndc2, ndc3). The competitive mass retailers' brands (di1, ndc3) or cheaper imports (ndc3) dominate the markets. Branding hence require investments in advertising (di1, cdc1, cdc2, ndc3), with limited perspectives if the national market is targeted only, given consumption habits (cdc2, cdc1, ndc3). Markets are barely open to other products than industrial standards of simplicity, standardized visual aspect and taste (ndc3, cdc1, di1). On the other hand, niches in specialized retail, for example, in cheese production, do not cover the demand of the consumers (ndc3, di1).

From this analysis, the mainstream cooperatives and the new cooperative models draw different market strategies. We summarized these strategies in Table 10.

Arla adopted the strategy of targeting the European and the extra-European export markets with a variety of high added value branded products (Arla Foods 2019a). Currently, the European market represents

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62% of its total revenue, of which 50% comes from brands (Arla Foods 2019a). The cooperative identifies emerging markets in internet sale of dairy products in Asia, and considers these more promising than a focus on local/regional productions in European countries (cdc2). The cooperative registers there a revenue growth of about 5%, of which 85% from brands (Arla Foods 2019a). Besides brands, the company also holds assets in milk-derived food ingredients (Arla Foods Ingredients 2017) and milk powders based products through joint ventures on the Asian and African markets (Arla Foods 2019a; 2019b).

The *Laiterie des Ardennes* does not have the scale of *Arla*. The cooperative manages its industrial plant producing consumption milk, butter and milk powders. The quality of its milk powders (infantile on extra-European export markets; intra-European delivery to industrial bakeries and chocolate makers) acts as differentiation factor on the markets (cdc1, cdc2). On the European market, the cooperative does not hold brands, and acts with its processing plant as subcontractor for brand holders and other dairy cooperatives. The cooperative runs on a cost-effective light structure in terms of workforces (cdc1, di1).

The focus of the mainstream dairy cooperatives on industrial milk processing and extra-European markets remains necessary, according to some interviewees, given the limited potential for niche productions on the Belgian market (f3, ndc3). The interviewees of the new cooperative models identify nevertheless a potential on the Belgian market to valorise dairy products with a clearer link to the farming system. The interviewees mention, for example, products based on grasslands, given their effect on the gustative properties of milk (ndc2, ndc3, f3).

Two of the three new cooperative models (*Fairebel* and *Biomilk*) are active on the segment of consumption milk. They target the consumer's willingness to pay for a product that guarantees a fair income to the farmers. The three new cooperative models (ndc1, ndc2, and ndc3) are

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also present on the segment of cheese production, as well in mass retail as in specialized stores. One of new cooperative model also considers the export potential of niche cheese production for small volumes in the neighbouring countries (ndc2).

Table 10 : Generation of added value on the markets and differentiation factors of the studied cooperatives

	Mainstream cooperatives		New cooperative models		
	Laiterie des Ardennes	Arla	Fairebel	Biomilk	Margurite Happy Cow
Differentiation factor on the markets and main source of generation of the added value – European markets	Processing - quality of the powders for infantile and human consumption	Processing and branding	Consumers' willingness to pay for a larger part of the profitability margin of the end-product given back to the farmer	Dairy products with a clearer link to the local character of productions and the farming systems, for example based on grasslands, and their effect on the gustative properties of milk	
Outcomes on the European markets	Trading of milk powder and mass retail	Trading of milk powder, and mass retail	Mass retail	Mass and specialized retail	Mass and specialized retail
Generation of added value on the extra-European export markets	Quality of the powders for infantile and human consumption	(1) Brands for wealthy customers – internet sales – (2) Milk powder trading and reconditioning of milk powder in dairy products	No	No	No

5.2. Definition of quality, generation and distribution of added value

5.2.1. Definition of quality

Depending on the interviewees, quality is a property related to milk as raw material or a feature built through to milk processing. Hence, the importance given to the milk as unprocessed raw material and the factors defining its qualities as raw material varies among the interviewees. We summarized in Table 11 the features attributed to milk as raw material by interviewees.. Among the interviewees who answered the question “what defines a milk of quality?” or who spontaneously talked about how they defined milk (19 interviewees), we identify a clear difference between two groups:

1. The interviewees (Table 11, group 1) who define the quality of milk on the base of food security/sanitary criteria only (cell counts, amount of impurities in milk) (sp2, f1, di1, sp1, cdc1, cdc2, u1), to which some add criteria linked to the well-being of the cows (sp1, u1). We find in that category interviewees coming from the mainstream dairy cooperatives, the dairy industries, the feed sector, the public services and the farmers ‘unions ;
2. The interviewees (Table 11, group 2) who define the quality of the milk as influenced by a broader scope of farm practices than the farm practices related to hygiene, food security and animal wellbeing mentioned by the interviewees of the previous group (sp3, sp4, sp5, sp6, ndc2, ndc3, ndc3bis, f3, cp1, u4, ir1). We find in that category (Table 11, group 2) interviewees coming from the new cooperative models, the feed sector, the public services and the farmers’ unions.

Some of the interviewees of the second group stressed that the definition made by actors about the quality of the milk was dependent upon the use made of the milk (sp3, sp4, sp6, ndc3, ndc3bis, f3, b1). On one hand, milk used for the production of powder do not require other additional quality criteria than the sanitary requirements linked to hygiene on farm (f3). On the other hand, cheese producers, or producers of products (yogurts) with distinctive gustative features tend to encompass in their evaluation of quality broader criteria than the ones related to hygiene on farm (sp5, ndc3, ndc3bis, cp1). The processing stage builds there on the qualitative properties of the milk (freshness, taste) to produce products with high-quality texture and taste (Murphy et al. 2016). Interviewees from the first group consider that milk used to produce consumption milk (cdc2) and industrial butter (f1) needs no additional characterization than the ones linked to general food security/sanitary requirements. The useful content of the milk (sugars, proteins and fat) matters (f1, sp1, cdc2), and its physico-chemical properties, so as to manage the transformation processes (di1). The processing and marketing stages create the final product's added value (di1, cdc2). These stages may require important Research and Development processes, for example for the extraction of derived ingredients (cdc2) (Arla Foods Ingredients 2017). The marketing stage requires huge investments in advertisement (cdc2) that only large-scale stakeholders may afford (ncd3). The fact that milk may acquire gustative properties through cows' feeding is unclear to some (f1, sp1). That property is irrelevant on today's market (cdc2).

We find in both groups the awareness that a particular definition of quality may only generate added value as long as the consumer is willing to pay for it (u4, di1, ir1, f3, cdc2, cdc1). In this regard, the role played by marketing, packaging and consumer's information is stressed (ndc2, di1, u4).

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Table 11 : Features contributing to the definition of the quality of milk – answers by the interviewees to the question “what defines a milk of quality (milk considered as raw material)?”

	Features of the milk taken into account in the definition of quality	Determining factor	Number of citation/group	
			Group 1	Group 2
Criteria evenly cited in the two groups	Production of useful content (richness of milk in proteins and fatty acid)	Cow feeding : balanced ration, targeted use of feed complements increases the production of useful content	2	2
	Cow well-being		2	2
	Definition of quality linked to the willingness to pay of the consumer for given features		2	3
Criteria predominantly cited in group 1 (public services, dairy industries, feed companies, mainstream dairy cooperatives, unions)	Cell counts and requirements linked to food security	Sanitary status of the cows, global hygiene on farm	6	1
	Physico-chemical properties of the milk as raw material	Cow feeding : grassland influence the physico-chemical properties of the raw material	1	0
Criteria predominantly cited in group 2 (public services, new cooperative models, research, unions)	Gustative properties (taste)	Cow feeding : grasslands give milk distinctive gustative milk properties – also influenced by the practices of grass conservation	1	8
	Fatty acid profile of the milk	Cow feeding : grassland-based diet increase the omega 3 profile	1	4

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Cheese yield (K-casein content of the milk)/richness in components (ex : richness of fatty acids of jersey cows)	Cow race	1	7
	Cow selection	1	4
	Freshness of the milk (time between collection and processing)	0	1
Presence of butyric acid spores	Cow feeding (absence of or dryer silages)	0	7
Types of microorganisms in the milk when milk used raw	Stables management – degree of concentration of cows in stables	0	4
Environmental impact	Degree of intensity of the farm production, origin of the feed	0	2
Definition of quality dependent upon the use made of the milk		0	7

5.2.2. Distribution of the added value along the value chain

5.2.2.1. The mainstream dairy cooperatives distribute evenly the added value to all members

In the mainstream dairy cooperatives, all farmers receive, by statutory requirement, the same farm-gate price for the milk they produce (cdc1, cdc 2, sp3) (Arla Foods 2018). Criteria of food security defining quality premiums follow the federal law (legally defined thresholds on plate counts – representative of the amount of germs, somatic cells counts, residuals of antibiotics and visible impurities) (SPF santé publique 2006; Gouvernement wallon 2009). The dairy cooperatives may also apply stricter thresholds on the quality requirements than the federal food security thresholds (cdc2), or any additional quality criteria, at the

condition that that criteria is measurable in the milk samples (Gouvernement wallon 2009). The cooperative must grant the quality premium – capped to 2 eurocents/litre - to every member of the cooperative, in a non-discriminatory manner (Gouvernement wallon 2009).

The cooperative pays the farmers on the profitability margins generated within the vertically integrated model (Figure 36). Even when the dairy cooperative designs a project of separate milk collection to focus on certain properties of the milk produced by the farmers, for example geographical origin (cdc2), the profit margin is equally redistributed among all members. Part of the milk payment takes the form of benefit retrocession at the end of the accounting year.

5.2.2.2. New cooperative models diversify the channels of redistribution of the added value to the farmers

The new cooperative models enlarges the modes of redistribution of added value by generating additional fluxes of profit margins to specific groups of farmers.

Within the new cooperative models, distribution takes place through three mechanisms, illustrated in Figure 36:

1. Direct ownership of brands by farmers (the *Fairebel* brand and the *Bioterroir* brand);
2. Direct retrocession of the profit margin under the form of a fixed premium paid to a specific group of farmers whose milk answers additional quality criteria (the *Marguerite Happy Cow* model). On top of the remuneration they receive from their mainstream dairy cooperative, the farmers receive a premium from the milk processors for the use of their milk ;
3. Separate milk collection through an alternative cooperative structure with additional quality criteria than the criteria of the

mainstream dairy cooperatives (the *Biomilk* model); the farmers share the profits generated by the sale of their milk to a variety of milk processing operators, the cooperative centres its activities on milk collection and doesn't invest in any milk processing plant. The revenue of the cooperative, and consequently the profit margin distributed between members, is dependent upon the ability to negotiate a good price for the milk sold to processors.

The two first redistribution models (*Fairebel* and *Marguerite Happy Cow*) complement the remuneration of the mainstream cooperative. As the price of the *Fairebel* products do not fluctuate much, the margin redistribution to the farmers is relatively constant (ndc1). *Marguerite Happy Cow* offers its farmers-members a fixed premium, that may get higher when the milk price drops. These payments hence act as a form of insurance for the farmers.

Fairebel markets a quantity of milk equivalent to 4% of the production of the brandholders. Every farmer brandholder receives an annual retrocession of about 2000 euros, about 0,5 eurocent per litre milk they produce (calculated on the base of the amount of members, the annual retrocession (ndc1) and the average dairy production per farm in the Walloon region (Collège des producteurs 2017)). *Marguerite Happy Cow* offers to the farmers a premium of about 3 cents per litre on 2/3 of the production of its farmers (Jacques et Associés 2018), thus 2 cents/litre on the totality of their production.

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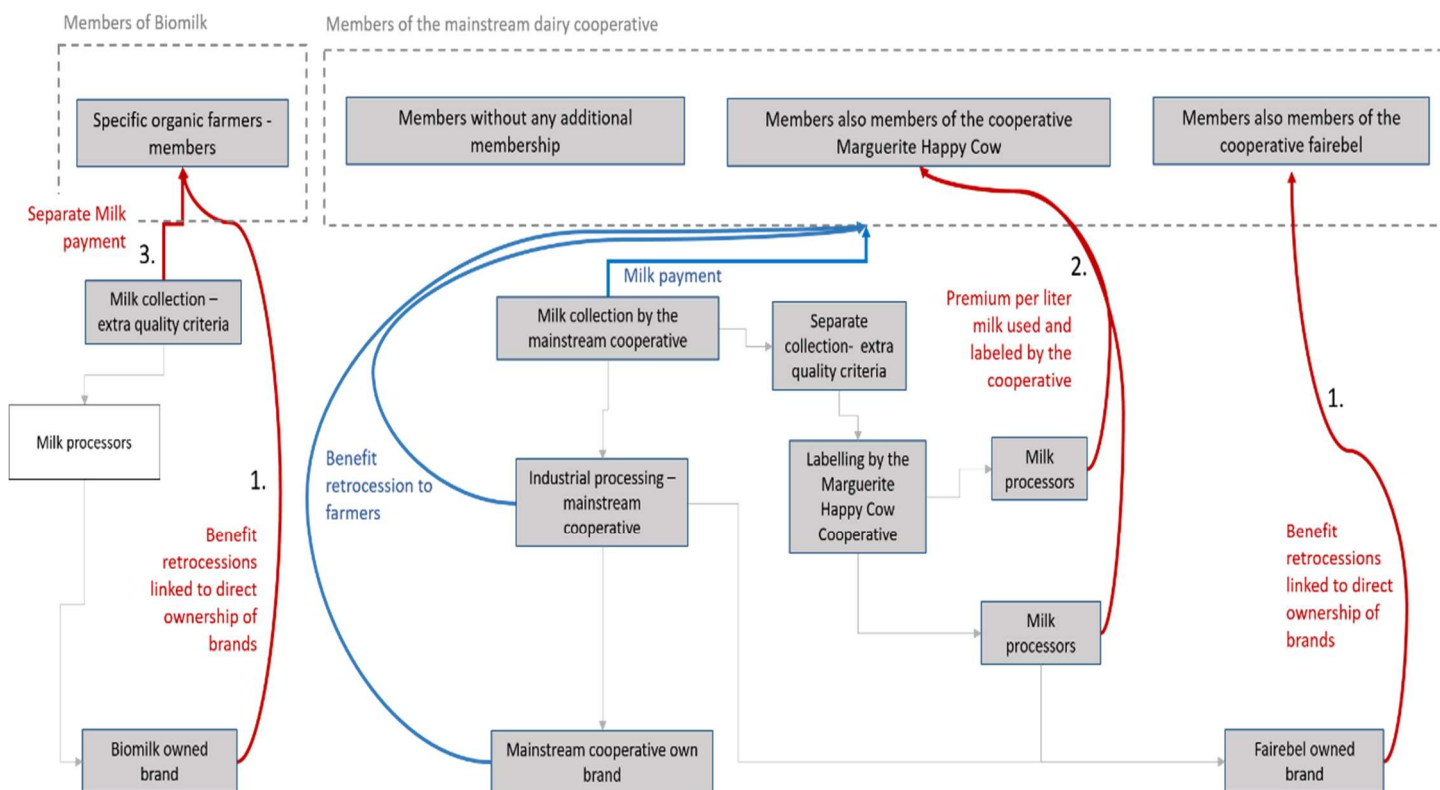


Figure 36 : Graphical representation of the enlargement of the fluxes of redistribution of the added value to farmers through the new cooperative models

5.3. Structural organisation of governance and relationships between the members of the cooperative

The mainstream cooperatives and the new cooperative model present distinct features in terms of membership and management detailed hereunder and summarized in Table 12. We further explore how these features influence the relationship between the structure and its farmer-members.

5.3.1. Membership

Two new cooperative models (*Fairebel* and *Marguerite Happy Cow*) present a mixed membership of farmers, milk processors, and consumers. The presence of other actors, beyond farmers, in the new cooperative models, offers structural opportunities of dialogue across the value chain (u2, sp3), and complementarity in strength and resources between actors (ndc3, ndc3bis, ndc2, sp3, ndc3bis, sp5). Cooperation works well between partners of similar scale (f1, f2, f3), and when processors do not act against each other on the same markets (ndc3bis, cp1).

5.3.2. Management

Mainstream cooperatives work with professional managers, controlled by farmers. The new cooperative models involve farmers directly in the management of the cooperative and/or in the marketing/promotional activities (ndc1, ndc2). The new cooperative models are grassroots initiatives by farmers/milk processors. These initiatives run on a management exerted by farmers/milk processors only, with few or no additional operational help (ndc1, ndc2, ndc3).

5.3.3. Relationship between the cooperative and the farmer-members

The scale of the mainstream cooperatives and their structural organisation (professional management, processing plants managed as distinct entities from the cooperative to which they belong) (Filippi, Frey, and Mauget 2008) does not help farmers have the feeling to hold a power of strategic decision-making (sp3). However, there are mechanisms of representation and control by dairy farmers in large-scale cooperatives (cdc2, sp3). *Arla*, for example, organises elected district councils further delegating members in representation bodies at higher geographical levels (Arla Foods 2018). In other countries, farmers would tend to use these channels more actively to influence the strategic decisions than in the Walloon Region (sp3).

Interviewees mention distinct issues of dialogue with farmers on the strategic orientation of the mainstream cooperative, depending on their profile (cdc1, cdc2, sp3, sp6, ndc2). On one hand, some farmers would like the cooperative to invest towards product diversification but lack consideration for the costs-benefit ratio of such investments at an industrial scale (cdc1, di, sp3). Concerning the *Laiterie des Ardennes*, these farmers also tend to overlook the costs of transitions linked to the change of business-model, requiring building up an expertise – for example in marketing – that is not present (cdc1). These farmers tend to be distrustful towards the management (cdc1, ndc2). On the other hand, new investments towards diversification could stir the dissatisfaction of large-scale intensive farmers whose farm model aligns with the requirements of the present business model and would not want to support other farming systems, let alone see them benefit from an extra remuneration (cdc1, cdc3). The dairy cooperative relies on the latter farmers for the profitability of its industrial plants (cdc1). Consequently, directors do not see it as the responsibility of the cooperative to cover investments towards product diversification (cdc1).

The new cooperative models focus on dialogue with the farmers on the issues faced in the management of the project, to inform them about the market situation, the constraints linked to competition (ndc3, u4). The expectations, in return, are that farmers develop a culture of initiative and responsibility about the processing of their milk (ndc3, b1, sp5, f1). The interviewees oppose such a logic to the situation prevailing until now in the frame of the European agricultural policies (ndc3, b1, sp3), where farmers are driven to produce quantities of raw materials (sp6, ndc2, ir1) and where public subsidies support farmers and market pathways (ndc3, b1, sp3, sp1, sp5bis). A change of culture requires the awareness that the generation of added value is ideally a proactive bottom-up process (sp3) generated by farmers and milk processors (ndc3), and requires attention to the market outcomes of one's activities (f1, sp5bis).

Table 12 : Summary of the governance features of the studied cooperative models

	Mainstream cooperatives		New cooperative models		
	Laiterie des Ardennes	Arla	Fairebel	Biomilk	Marguerite Happy Cow
Type of Membership	Farmers		Mixed membership (farmers, consumers)	Farmers	Mixed membership (farmers, milk processors, feed cooperatives)
Management	Centralized management by professional managers + board of directors for control and validation		Decentralized management – informal share of the management task among board of directors		
Selection of the management by the	Direct election of the board of directors by the	Indirect representation of farmers through elected	Direct election the board of directors		Direct election of the board of directors. Statutory requirement

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members	farmers in general assembly	district councils further delegating members in representation bodies at higher geographical levels, electing the board of directors			to have a majority of farmers in the board. Internalization of the communication process alongside the value chain in the board of directors
Promotional activities	Specialized workforce paid by the cooperative		Mandatory involvement of the farmers in the promotional activities	Voluntary involvement of the farmers in the promotional activities	The milk processors involved in the cooperative take care of the promotional activities (limited involvement of the farmers)

5.4. Interactions with external business partners

The mainstream dairy cooperatives may have agreements for separate collection and milk delivery to processors, but only on the base of features of geographical origin of the milk (cdc1). Two cheese processors, in particular, consider this as an issue, as they wish to know where the milk comes from and which practices the farmer producing the milk has adopted (ndc3bis, ndc3). According to these interviewees (ndc3bis, ndc3), it is the reason why they supported the development of the *Marguerite Happy Cow* new cooperative model: to develop an agreement with specific farmers about their milk production practices and receive that milk specifically. To be able to do this successfully, they

rely on the fact that a mainstream dairy cooperative accepts to grant a service of separate milk collection. To reach such an agreement, they had to change their delivery agreement with a mainstream dairy cooperative who refused to grant such a service. The interviewees indicate that the management of the dairy cooperative was not receptive to their requirements and did not find it appropriate to disclose to the processors information about their milk producers. The dairy cooperative with whom these processors are now cooperating for separate milk collection, has shares in one of the cheese processing plants of the processors involved in the new cooperative model. This shift of mainstream dairy cooperative also means that the farmers who want to participate in the new cooperative model also have to switch from one mainstream dairy cooperative to another, which may sometimes require a notice period of several years.

Let us note that one mainstream dairy cooperative is planning to monitor the farm practices of their members to accommodate in the future the wishes of brand holders or processors (cdc2). One interviewee (sp3) considers that there is little awareness as to how farming systems affect the quality of the milk. The mainstream cooperatives do not evaluate the effect of grassland feeding on the fatty acid composition of the milk (cdc2, cdc1) and sell pasture milk according to a shared norm (Campina 2019) on the basis of requirements of access to grasslands for cows without specific requirements on the proportion of grasslands in the feed ration (ir1, cdc2, cdc1). Connexion with researchers or public services working on the effects of grasslands on the properties of milk are inexistent (sp6, ir1). So were contacts, between the mainstream cooperatives and the cheese processors on the by-products of cheese production (lactoserum), although the mainstream dairy cooperatives identify this resource as strategic in their ingredient branches (cdc2). Interviewees cite differences in scale as the main obstacles to cooperation (di1, f3, cdc1, cdc3).

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The new cooperative models are not vertically integrated and work on principles of negotiation between the different levels of the value chain (between milk collectors, milk processors, brandholders). Let us note that *Marguerite Happy Cow* institutionalizes the negotiation process through the cooperative structure, between milk producers and milk processors. The new cooperative models answer, in their relation with the other stakeholders in the value chain, and within their own structure (in the case of *Marguerite Happy Cow*), to the definition of hybrids (a coordinated network of partners interacting on a long-term basis) (Ménard 2017). Based on Gereffi's framework categorizing value chains (Gereffi, Humphrey, and Sturgeon 2005) *Fairebel* presents, regarding its supplies in consumption milk, the features of a modular hybrid value chain (no additional criteria on the milk than the industrial food safety criteria). *Biomilk* and *Marguerite Happy Cow* present the features of a relational value chain, where a set of additional criteria on milk are guaranteed to the processors and brandholders through reputation ties. Both models offer to processors the guarantee, beyond written specifications on farm practices, that the providers will effectively provide a product answering distinctive requirements. The absence of vertical integration gives flexibility to seize market opportunities and answer specific requirements of brandholders or milk processors (ndc2). Milk collectors may accept small-scale contracts of delivery to brandholders and involve a milk processor as subcontractor. However, the negotiation process runs smoother in networks of partners having a shared understanding of market approaches and mutual interest in cooperation (ndc2).

Table 13 summarizes the main features of interactions of the studied cooperatives with the business partners.

Table 13 : Summary of the features of interactions with business partners

	Mainstream cooperatives		New cooperative models		
	Laiterie des Ardennes	Arla	Fairebel	Biomilk	Marguerite Happy Cow
Main business partners in the value chain	Industrial food processors and mass retail		Food processors (industrial and non-industrial), mass and specialized retail		
Basis for negotiation with the main business partners	Concentrated mass retail and narrow profitability margins		<ul style="list-style-type: none"> - Ability to seize market opportunities and answer specific requirements of brandholders or milk processors - The guarantees offered by the new cooperative model can be used as differentiation factor in the communication towards customers 		
Communications related to the origin of the milk	Based on the geographical origin solely – although seen as a future challenge to collect information about the farm practices of the members to answer the requirements of the milk processors and brandholders (cdc2)		Communication focused on the fact that the brand is held by Belgian farmers	Communication on the specific origin of the milk and the farms from which the milk originates	
Relationship with other business partners	Few agreements with other food processors around by-products – specifically none when a food processor is a competitor of the cooperative’s own processing plants		Main issue is to cultivate networks of partners having a shared understanding of market approaches – difference in scales may bring power games. Guarantees (in terms of origin of milk, or the cooperative structure as such) is a differentiation factor that the business partner may also use in its communication towards customers, and an element of strength in the negotiation		

6. Discussion

The results detailed in the previous section underlined a dichotomy between the mainstream cooperatives and the new cooperative models in terms of market approach, definition of the milk quality and distribution of the added value, governance practices, and relationship with members and with business partners. Replacing these features within Williamson's framework will help consider (1) the specificities of each model within a broader macro-scale socio-technical coherence and (2) the pathways this coherence enables and disable, namely which lock-ins to diversification pathways our research uncovers. Finally, the coexistence of both models will be discussed in light of this analysis and of the interaction with partners uncovered in the last section of our results.

6.1. A dichotomised landscape reveals the coherence of two models of development

Williamson (Williamson 2000)'s framework considers the strategic choices of an organisation as resulting from the interplay of various embedded dimensions, called levels. According to this framework (represented in Figure 37), firms allocate their resources (level 4) because their choices are embedded within and determined by their governance structure (level 3). The way this governance structure determines how some strategic choices are more efficient than others, and which governance structure is more adapted to achieve strategic goals, depends on the regulatory framework at hand (level 2), and on the effect of the broader informal rules guiding behaviour (level 1). Level 2 and 1 typically describe what recent studies on transitions in the dairy sector encompass under the concept of *institutional logics* (Runhaar et al. 2020).

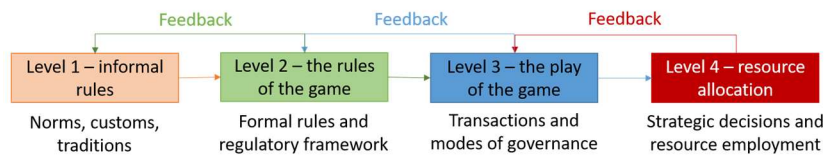


Figure 37 : Representation of the four levels of analysis of resource allocation in firms (Williamson 2000)

We observe in our results a coherence linking strategic choices with governance structure, regulatory framework, and informal rules, that defines two distinct development models. These development models stem from a market analysis that is similar across the interviewees from both models (results, section 5.1). On one hand, the vertically integrated mainstream dairy cooperatives make strategic choices considering the pool of milk to valorise, the existing sets of processing plants in which they invested and the means at hand given their scale and business structure. Their strategy to generate added value (results sections 5.1 and 5.2.1) focuses on pathways valorising large volumes of milk on the market: industrial processing and branding (see Figure 38 representing the coherence of the mainstream cooperative’s model within Williamson’s framework). In this configuration, milk is a raw material that has to answer food security requirements and offer useful content (results section 5.2.1). Advertising concepts like “grassmilk” are marketing arguments disconnected from the intrinsic properties of milk (results, section 5.4). There is little connexion to the scientific evidence showing that milk can be something else than a standard product (results, section 5.4). The non-discriminatory rule in terms of payment of the milk to farmers (results, section 5.2.2) fits with that standardized approach (Lamine et al. 2012). This rule is a statutory requirement (level 3) supported by the legal frame of payments to farmers in cooperatives (level 2) (results section 5.2.2). More globally, the informal rules (level 1) of farmers not involved – if only through representation – in the management and not trained on business matters, aligns with a structural governance based on professional management (level 3) (results sections

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5.3.2 and 5.3.3). Resorting to a *Multi-Level Perspective* lens, this coherence hints at the existence of a stabilized and incumbent socio-technical regime (Lachman 2013).

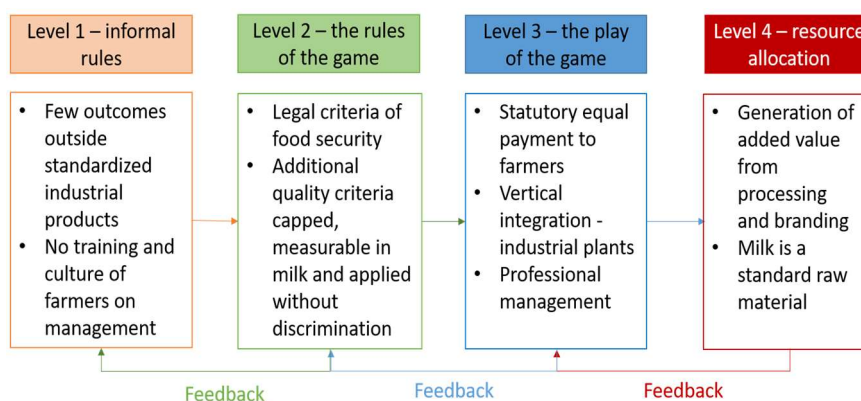


Figure 38 : Representation of the coherence of the mainstream cooperative's model, within Williamson's framework.

On the other hand, the new cooperative models consider the market potential of products based on a differentiated gustative and nutritional value of milk and on the links between products and the farming system. They target the willingness of consumers to pay for these properties on the national market (results sections 5.1 and 5.2.1). They remunerate selective farmers through the creation of new cooperative structures complementing the mainstream dairy cooperatives (results section 5.2.2.2). Through de-integration and structural dialogue across the value chain, they aim at supporting an entrepreneurial dynamic in milk processing that includes farmers and milk processors (results sections 5.3.1, 5.3.3 and 5.4). The representation of their features in Williamson's framework in Figure 39 shows an uncompleted level of coherence, as the rules of the game covering the remuneration of milk are not specifically calibrated to the features of this new development model. This incomplete coherence is very well documented within the Multi-level Perspective : niches face well-structured incumbent socio-technical system whose rules, encompassed in the concept of "socio-technical

regime”, reinforce its coherence (Geels and Kemp 2007; Geels 2004). The new cooperative models face an incumbent dairy regime which seems driven by a coherent market-driven industrial institutional logics (Runhaar et al. 2020), and in which they manage to implement new institutional logics (at the level of informal rules). In this regard, the new cooperative models appear as a structural answer allowing to by-pass the rules of the existing socio-technical regime, and acts as protective spaces for innovation (Hans de Haan and Rotmans 2011). These new cooperative models rely on a more direct involvement of the farmer in the management and more broadly on a culture of responsibility related to the processing of milk by farmers (results, section 5.3.3). The coherence of this model hence relies on a feedback effect from the level 3 (the play of the game - governance) on level 1 (informal rules) for what concerns the mentality of farmers. The impact of these changes on farmers, as well as on the definition of their identity, remains to be explored.

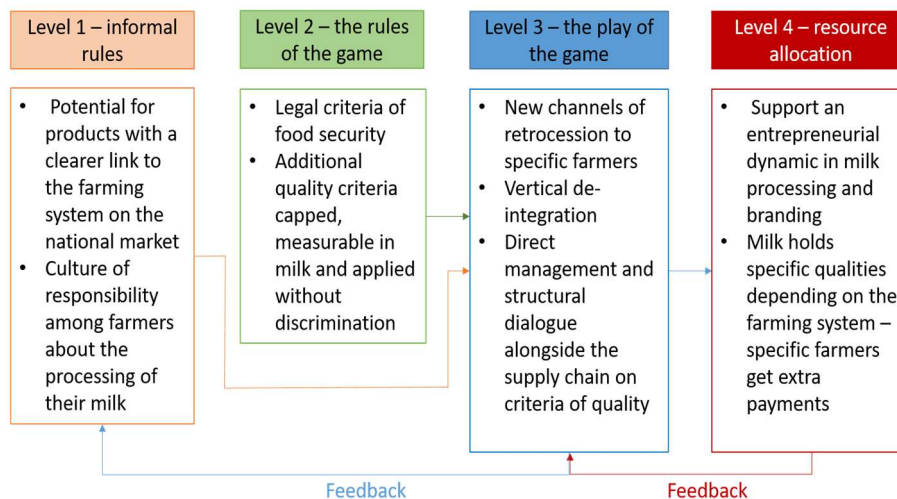


Figure 39 : Representation of the coherence of the new cooperative models within Williamson's framework

6.2. New cooperative models act as structural answers to lock-ins grounded in the coherence of the mainstream dairy model

In countries like Switzerland and France, studies (Reviron and Python 2018; Perrot et al. 2017) link the generation of higher added value on the dairy markets to two strategies. The first strategy is based on branding and specialized industrial outcomes. Milk remains a standard raw material in this strategy (Reviron and Python 2018), and the costly R&D investments at the processing and marketing stage generate the added value of the differentiated product (Perrot et al. 2017). The second strategy is based on the development of value chains relying on a milk holding specific features (geographical origin, modes of production, for example organic, GMO free, grassland-based) (Perrot et al. 2017). In the latter case, the contribution of the milk producer (the dairy farmer) to the added value of the product marketed is higher than in the former case. This may increase the share of added value retroceded to the farmer in these value chains (Reviron and Python 2018).

The coherence of the mainstream cooperatives' development model, identified from the results in point 6.1, hints at the existence of a stabilized and coherent pattern of industrial milk processing in which these cooperatives evolve. The possibility to invest in pathways following the first strategy described here above seems linked to the means and resources the dairy cooperative may mobilize, with a strategic advantage linked to larger-scale models (results points 5.2.1 and 5.3.3), like that of *Arla*, compared to that of the *Laiterie des Ardennes* (point 4).

Our analysis also shows that this coherence is a major source of lock-ins acting against pathways of diversification of the dairy productions that follow the second strategy described here above by Reviron and Python (2018) and Perrot et al. (2017). The concept of lock-in expresses the fact that dominant routines in production, use of technologies, transfers of

knowledge and institutional practices hinders pathways of development moving away from these routines (Geels 2004; Lachman 2013; Maréchal 2012; Sutherland et al. 2012; Pesch 2015).

The *Laiterie des Ardennes* has the scale of many regional dairy cooperatives present in countries like France (Filippi, Frey, and Mauget 2008; Alavoine-Mornas and Madelrieux 2015) These smaller-scale cooperative models often combines economic and social utility (Koulytchizky and Mauget 2003) by linking the cooperative project with objectives of rural development and maintenance of a dairy activity in remote territories non-adapted to intensive farming (Alavoine-Mornas and Madelrieux 2015). Yet, the development model of the *Laiterie des Ardennes* relies mainly on a set of non-diversified production of consumption milk, butter and milk powder (see point 4 and results section 5.1). We identified from our results the following obstacles to a more diversified strategy:

1. The cooperative holds one milk processing plant, whose profitability depends on the maximization of its use and on cost sparing. The cooperative relies on the quantities produced by the members (results section 5.3.3), and in particular on the milk collected outside of the Walloon Region (point 4), to maximize the profitability of the plant. It is in its interests to accommodate the larger-scale intensive milk producers whose farm model aligns with the requirements of the present business model, and who would not want to support other farming systems, let alone see them benefit from an extra remuneration (results section 5.3.3) ;
2. Diversification entails a change of business-model, and requires the development of a marketing expertise that is not present (results, sections 5.1 and 5.3.3) ;
3. Dedicating existing industrial lines to processing pathways with limited market potential could induce a complexification of the

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management and an imbalance of profitability (of the cost/benefit ratio) (results section 5.3.3);

4. The relative benefit per euro invested will be negligible at the scale of the dairy cooperative given the market perspectives (results, section 5.1); directors do not see it as the responsibility of the cooperative to cover such investments (results section 5.3.3).

One aspect of the lock-ins described here concerns the relationship between the farmers and the dairy cooperative. The profitability of the milk processing plant seems to make the management of the cooperative sensitive to the weight of the most intensive milk producers (results section 5.3.3). This sensitivity to the voice of intensive milk producers can also relate to the weight of these producers in terms of shares and voting rights. More globally, this sensitivity ties with the question of the broader cultural conception shared among the cooperative members about what constitutes the responsibility and mission of the cooperative (results section 5.3.3). This calls for more research in the direction of organisational identity, the consideration of the “organisational purpose and values as a whole” (Rijswijk, Klerkx, and Turner 2019) and the interactions between internal and external agents in the definition of the organisational identity – including in relation to governance aspects like voting rights.

The dairy cooperative *Arla* acts at a totally other scale than the *Laiterie des Ardennes* (point 4). The questions of collecting enough milk to maximize the use of its plants, the need to accommodate farmers and the possible costs of transition of business-model or expertise are less stringent, due to its scale, broad anchoring, and the present diversity of its activities. However, the interests the cooperative might have in any regional/local development pathways based on the second strategy of diversification is even more negligible, given its scale and the division of the return of investment among all members.

The remuneration of milk quality must be based on measurable criteria and be non-discriminatory, according to legal requirements and statutory rules of the mainstream dairy cooperatives (results section 5.2.2). In a model where milk remains a standard raw material and where the added value comes from processing and branding (results section 5.2.1), the mainstream dairy cooperative meets easily the constraint of non-discriminatory remuneration.

Setting a rule of remuneration of the farmers based on the effects of feeding on the composition of milk may be risky for the mainstream cooperative, given the non-discriminatory rule (results section section 5.2.2). Indeed, any farmer meeting the criteria could then pretend to the premium, regardless of the possibility for the dairy cooperative to valorise that milk on market pathways. The cooperative may decide to collect separately milk from given farming systems, without remunerating the farmers extra quality premiums for this. Some mainstream dairy cooperative anticipate that development pathway on the market (results, section 5.4) but with a cost-effectiveness calculated at the level of the dairy cooperative and without considering incentives for farmers to maintain a given farming system through remuneration. Mainstream dairy cooperatives may also provide milk processors the service of a separate milk collection. However, the system of remuneration (results section 5.2.2) does not provide to the concerned farmers any financial incentive to meeting the criteria required by the milk processors.

The lock-ins described here above relate:

1. to the model of industrial development, based on the maximization of use of the processing plant and of its production lines (results section 5.3.3);
2. to the subsequent sensitivity to accommodate the larger-scale intensive milk producers (results section 5.3.3);

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3. to a broader shared conception, at the level of the farmers and at the level of the management, about what the goals and missions of the dairy cooperatives should be (results section 5.3.3);
4. to the costs of transition related to a given business model (results, sections 5.1 and 5.3.3);
5. to the lack of strategic interest of investing in diversification pathways, considering the negligible return on investment expected, especially when divided among all members (results, section 5.1 and 5.2.2);
6. to the non-discriminatory rule of remuneration (results section 5.2.2), entailing a possible imbalance between cost-benefits in case the dairy cooperative introduces additional quality criteria;
7. to the associated cultural definition of what defines milk, as raw material (results section 5.2.1), that does not favour dialogue with downward milk processors aiming at considering that aspect (results section 5.4);
8. to the fact that the present remuneration (results section 5.2.2) rule does not provide incentive to farmers to maintain a given farming system to support diversification pathways, even if the dairy cooperative decides to organize a separate milk collection for specific processors.

The new cooperative models propose structural answers to the lock-ins by following a logic of de-integration and externalization of the investment and the remuneration of the concerned farmers from the mainstream dairy cooperative (results section 5.2.2.2). This externalization of initiative, remuneration and risk, allows specific groups of actors to explore new development pathways in accordance to their current market potential, and to mutually agree on broader criteria of definition of milk (results sections 5.2.1 and 5.3.3). The de-integration allows considering the most profitable modes of cooperation between

milk collection, milk processing and marketing and a complementarity of strength.

The new cooperative models were created because of the involved stakeholders felt that their initiatives could not be supported within the frames of the mainstream dairy cooperatives. Following Gereffi's framework (Gereffi, Humphrey, and Sturgeon 2005) on value chain governance, de-integration towards a relational value chain does necessarily have to go paired with an increase of the capabilities of the suppliers to provide products answering complex specifications. It is the case regarding the *Biomilk* and the *Marguerite Happy Cow* models, where feed processors, farmers and processors provide a differentiated product answering specific requirements. Such a model hence relies on an increased responsibility of every involved actor to provide supplies answering given requirements. The model, in return, allows a supplementary channel of retrocession of the added value to the farmers involved (results section 5.2.2.2) that is not possible within the institutional logics and related governance rules of the mainstream cooperative model.

Table 14 describes the lock-ins identified and how structural element of the new cooperative models help circumvent these lock-ins. We define as "organisational" the types of lock-ins that stem from the way the mainstream milk processing is organized, and the broader coherence of the rules co-evolving with it.

The model developed by the *Marguerite Happy Cow* cooperative appears to be the most thorough in circumventing the lock-ins of the mainstream cooperative models. It answers jointly the issue of control of quality of the raw material by milk processors, the issue of the incentive to invest in diversification pathways, the issue of separate remuneration to a selected group of farmers and the issue of cooperation and complementarity of strength between the various parts of the value chain.

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Table 14 : Lock-ins preventing mainstream dairy cooperatives to explore diversification pathways and answers provided by the new cooperative models.

Lock-in	Type of lock-in	Consequence of the lock-in	Answer of the new cooperative model to the lock-in
1. Pursuit of the profitability of industrial processing plants	Organisational – path dependency linked to past investments and scale-linked	The cooperative is unlikely to endanger its cost-benefit ratio by dedicating production lines to niche productions with limited market potential	The de-integration allows the exploration of diversification pathways at a scale that is sustainable economically and to consider the modes of cooperation between actors milk collection, milk processing and marketing that are the most profitable
2. Farmers with large-scale intensive farming systems won't feel responsible for the development of pathways valorising the milk of other farmers on the base of broader quality criteria than just the food security quality – and might not accept the decrease in retrocession linked to related investments	Financial, cultural and organisational	Most farmers won't favour the investments in diversification pathways and accommodating large-scale intensive farmers matters to maintain industrial profitability	The new cooperative models externalizes the initiative and the associated investments from the mainstream cooperative
3. The mainstream cooperative has specific missions	Cultural	Diversification into niche productions is not considered as strategic option	The new cooperatives offer structural frames for specific groups

and goals – diversifying in niche production is not one of them			of farmers to pursue their own strategic goals
4. Costs of a transition towards another business model (training and recruitment of new profiles, development of a new expertise)	Financial – linked to the business model (path dependency)	The lock-in of transition cost increases the risks associated with the investments and delays the return on investment, which reinforces lock-in n°3.	The de-integration and the development of new structures , like <i>Marguerite Happy Cow</i> , allows to generate opportunities of dialogue and complementarity of strengths
5. Negligible return on investment expected, especially when divided among all members	Scale-linked	scale-related lack of interest in issues of regional development	The new cooperatives offer structural frames to pursue investments and divide the returns on investments among the concerned farmers only
6. Setting a rule of remuneration based on the effects of feeding on the properties of milk (nutritional or gustative) may be risky , given the identified market outcomes for products valorising these properties	Financial (scale-linked) and organisational	The rule of remuneration entails extra costs compared to the possible market outcomes	The new cooperative models externalize the remuneration of specific groups of farmers from the mainstream dairy cooperative
7.. The definition of quality and its legal framing supports the consideration of quality linked to	Cultural	There is little alignment with the requirements of some milk processors	The new cooperative models offers frame where the quality of milk can be negotiated and agreed upon

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the farming system, only if the farming system influences the content of the milk and that effect is measurable			
8. The legal and statutory requirements on the payment of the milk impose a non-discrimination rule	Organisational	This prevents from remunerating the farmers whose milk could be used in diversification pathways, and provides no incentive for them to maintain a specific farm model	The payment of the share of added value to the farmer is externalised from the mainstream dairy cooperative, or alternatively (<i>Biomilk</i>) the whole model of milk collection is externalized within a smaller-scale cooperative of farmers meeting additional quality criteria

6.3. New cooperative models define pathways of coexistence in the future dairy sector

Two of the studied new cooperative models (*Fairebel*, *Marguerite Happy Cow*) act as complement to the mainstream dairy cooperatives (see point 4). The role of the mainstream dairy cooperative evolves and includes that of service-provider (for separate milk collection) to the new cooperative model, on top of its customary business activities. The mainstream dairy cooperative also uses the surplus of milk of the farmers not used in the new cooperative model. At this stage, these two new cooperative models cannot survive without the existence of the

mainstream dairy cooperative using the surplus of milk produced by farmers.

The *Biomilk* new cooperative model develops as a substitution to the mainstream dairy cooperatives. It is, however, inexact to say that *Biomilk* develops only as a separate niche: our results illustrate that *Biomilk* develops business connection with industrial milk processors and mass retail. As such, *Biomilk*, equally to *Fairebel* and *Marguerite Happy Cow*, also links to the channels of creation of added value of the incumbent regime, by answering needs emerging from the evolution of the broader consumption landscape. The new cooperative structures hence appear as structural answers to the issue of a broader definition of milk quality. They represent, as structures, a form of *institutional anchoring* that allows the development of new forms of *network anchoring* with the incumbent actors (processors, retailers, consumers) (Elzen, van Mierlo, and Leeuwis 2012).

A further detachment, or *insularization* (Vankeerberghen and Stassart 2016) from the mainstream cooperatives is unlikely in the short term, given the competitiveness of these mainstream cooperatives on markets allowing outcomes for large quantities of milk. However, by defining a new role for the mainstream dairy cooperative as service provider for milk collection, and by de-integrating the relationships between the stages of milk collection, milk processing and branding, we identify in the new cooperative models a potential for a reconfiguration of landscape on the long-term. Economically and historically, the vertical integration of processing plants by farmers' cooperatives answers jointly the issues of monopsony of buyers (not favourable to farmers) and of investments in long-term risky ventures (not favourable to investors) (Hansmann 1996; Schneiberg, King, and Smith 2008; Williamson 1987). At the condition that the governance structures guarantee a balance in strategic power, there might be possible pathways of multiple participation in and collaboration of farmers with an ecosystem of processors. This is

particularly significant at the scale of the Walloon Region where remaining traditions in milk processing and different farm systems still coexist. New cooperative models offer innovative pathways of value chain development on that account. They offer the potential for an economic tissue of processors to develop, between the two extremes of on-farm processing and industrial standardized large-scale production.

At their own scale, the new cooperative models illustrate what Ruzzier (2009) puts forward as contradicting the classical theory of transaction costs (Williamson 1987) : there is evidence of successful coordination of activities outside vertical integration, in the particular case of high asset specificity. When milk is not a standard good (and hence a specific asset), both partners of the bargain may have interest in maintaining cooperation, instead of putting the good to alternative use or resorting to an alternative source. This balance in interest “always generates a larger joint surplus than a contractual relation” (Ruzzier 2009). As exposed in our results (section 5.4) and in the section 2 of the discussion, the non-integrated model offers more flexibility to seize opportunities to explore niche markets and multiply the possible outcomes for the milk produced. It also allows cooperation with brand holders on a variety of quality patterns, including the ones related to consumers’ concerns for a fair payment to farmers (results, section 5.2.1). Farmers can hold the brand, but this cooperation may also take place with private brand holders – which means however, that part of the added value goes into private interests. All parties involved can spare costs related to the governance of an integrated model and the costs of opportunities related to the allocation of the milk pool to the existing processing pathways of the integrated models.

The new cooperative models, however, are not without limits. A first limit concerns the effective development of the markets for differentiated milk products and the extent of farmers who could benefit from such development. The development of the new cooperative models remains

dependent upon the market opportunities that could unfold. Additionally, models like *Biomilk* and *Marguerite Happy Cow* position themselves as relational networks towards their buyers. Their added value lies in providing a product with distinctive characteristics linked to the farming system. An important second limit is thus also, whether this added value is sufficiently recognized by processors, brandholders and consumers to support their development and see the amount of farmers concerned be significant at regional scale. A third limit is, ultimately, whether the extra remuneration offered to the farmer (results section 5.2.2.2) is enough of an incentive to maintain/develop a differentiated farm model.

The impact of the development of these new models on the viability of the mainstream dairy cooperative on which they rely, is also an issue. From the mainstream cooperative's perspective, a transition towards an economy of services supporting a diversity of products on the national market could constitute a diversification of interest in terms of resilience, given the vulnerabilities of the export-based development market, which the recent COVID-19 crisis illustrated (EPA monitoring 2020). This is particularly true for a cooperative of regional scale like the *Laiterie des Ardennes*, whose scale may limit its opportunities of investment in industrial diversification strategies (discussion point 6.2). Nevertheless, is the conversion to an economy of services to external operators viable for this mainstream dairy cooperative, in particular? This question calls for further research in terms of economic evaluation and modelling, at the level of the farmer and of the cooperatives, but these questions also stress how crucially such possible developments should integrate the notion of dialogue. The relationship between *Fairebel* and the Belgian historical cooperatives (Feyereisen and Mélard 2014), the account of some interviewees that they had issues making mainstream dairy cooperatives understand their needs (results point 5.4), uncovers that the confrontation of different institutional logics is not easy and entails that the incumbent stakeholders consider cooperation – if only by developing

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new services of separate milk collection - with new unfolding institutional logics (Runhaar et al. 2020).

As stated by Turner (2020), it is a challenge to include incumbent actors in possible partnerships with new cooperative models, to a point that the very same actors define “new role perceptions and power relations”. Dialogue may foster awareness about complementarity (results, sections 5.3.1 and 5.4) and an alignment on definitions and goals (Forney and Häberli 2017). It is, in a way, an integrative exercise for stakeholders to approach themselves as part of a multifunctional construct of a variety of innovation systems, whose combination may pave the way towards a more diverse and sustainable dairy sector (Pigford, Hickey, and Klerkx 2018). Dialogue requires a culture of cooperation and a consciousness about the power dynamics that may unfold due to differences of scale (results, sections 5.3.1 and 5.4), or that hamper the actors’ empowerment to act in a certain direction (Avelino and Rotmans 2011; Avelino and Wittmayer 2016; Forney and Häberli 2017; Turner et al. 2020). Finally yet importantly, dialogue may help consider common goals, for example in terms of research and development, consumers’ information, adapted structures of storage and distribution (results section 5.4) mutually beneficial in terms of long-term economic development.

In terms of transitions in the dairy sector, and more generally in the agri-food sector, this study stresses the relevance of considering “niche” and “regime” conceptualizations of actors and initiatives from an analytical – more than a realistic – posture (Pigford, Hickey, and Klerkx 2018), in order to account for the fact that transition *de facto* will happen because of contextualized (Vermunt et al. 2020) and sometimes messy processes (Feyereisen and Mélard 2014) of interaction between actors across any conceptual dichotomy. More attention should thus be drawn on the mechanisms allowing actors to overcome obstacles to cooperation in transition pathways, from innovative governance structures to spaces

for cross-sector and cross-scale dialogue (Pigford, Hickey, and Klerkx 2018) on long-term development goals.

7. Conclusion

Our research started from the open question of the perspectives drawn by the presence of the new cooperative models in terms of pathways of coexistence in the dairy landscape. Combining the *Multi-Level Perspective* with insights from the institutional economics brought forward that the new models answer lock-ins linked to the structural development of the vertically integrated cooperatives, and that prevent those to consider diversification outside of industrial processing and branding. This research calls for more attention to the institutional aspects in “messy dynamics that occur within and between projects and networks of actors that are involved in innovation processes » (Elzen, van Mierlo, and Leeuwis 2012). New cooperative models, in particular, enable new pathways of development by answering structural lock-ins linked to the vertically integrated cooperative models. The future evolution of these new cooperative models is not without challenges, in particular considering their relative viability at a larger scale and the issues of collective organisation. However, they draw the picture of a possible reconfiguration of the dairy landscape towards a more diversified ecosystem of actors.

This paper invites to consider structures of governance in collective action as a cornerstone-issue in terms of transition, and to analyse the significance of these structures in terms of enablement, co-existence and complementarity throughout the transition process.

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Chapter 5 - Embeddedness of the farmer's
agency: towards a reconsideration of agency
(and attitude towards collective agency) in an
heterogeneous farming landscape

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Foreword

This chapter focusses on the farmer’s agency and its embeddedness within the frames of the dairy value chain. In its first part, this chapter considers how farmers’ trajectories evolve in relation with the value chain, including in relation with the dairy cooperatives. The second part discusses theoretically how to approach the farmers’ consideration of practices in a heterogeneous farming landscape like that of the Walloon Region. The third part, finally, brings forward additional data on how farmers relate to collective agency.

1. PAPER - Lock-ins and agency: towards an embedded approach of individual pathways in the Walloon dairy sector

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Paper based on data gathered during my Master Thesis.

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Abstract: As the 2009 dairy crisis drew attention on the situation of dairy farmers in Europe, the extent of strategical power left to farmers in dairy cooperatives of increasing size is a frequently raised issue. Four dairy cooperatives collect 97% of the milk in the Walloon Region (Southern part of Belgium). Two of them integrated agro-food multinationals of world scale. We decided to analyze the trajectories of Walloon dairy farmers exploring alternatives to the delivery of milk to these mainstream dairy cooperatives. We focused on the territories situated east of the Walloon Region where dairy farming represents 75% of the farming revenues. Alternatives consist either in processing milk on farm or in concluding a contract with a cheese processor collecting milk directly from farmers. Our objective was to understand the issues faced in these alternative trajectories and the reason why these

alternatives remained marginal. We designed a qualitative case study based on interviews with farmers and local cheese processors. We mobilized evolutionary approaches on the stability and transitions of systems and approaches of change at the farmer's level. It appears that the alternative trajectories remain embedded in a broader dairy context. The lock-ins emerging from this context determine the evolution of the farming model towards intensification and the individual identity and capabilities of farmers. We present a model of interconnected and embedded lock-ins, from the organizational frame of the regime to the individual frame. This model illustrates how the agency articulates with structural dynamics. We propose structural measures in the organization of agricultural education and in terms of support to alternative supply chains that will enhance agency in favor of a change.

Keywords: Pathways of transition; Farmer's identity; Cheese processing; Alternative pathways; Individual trajectories; Dairy Cooperatives.

1.1. Introduction

The year 2009 saw a steep fall of milk price given to dairy farmers, going below 25 cents per liter of milk. As from 2008, following the 2003 Luxembourg Agreement reforming the Common Agricultural Policy, the EU introduced an annual increase in the national milk quotas and a price decline to anticipate the end of the quota system. The link between the European milk prices and the world market prices increased due to these measures. In 2009, the steep decline of the milk world prices induced in a price shock (Jongeneel et al. 2010).

At the time of the dairy crisis of 2009, in Belgium and neighboring countries, angry dairy farmers shed milk on fields, streets and public institutions and received extensive media coverage (Lynch 2013; Replinger 2016; Druetz and Padoan 2010; Europaforum 2019). The crisis revealed to the public the problematic situation of dairy farmers facing

high levels of indebtedness on their farms (European Commission, DG Agriculture & Rural Development 2014; 2015). The European agricultural policies and the lack of strategical power left to farmers in dairies, especially in dairy cooperatives, has been criticized (European Milk Board 2012).

The milk sector in the Walloon Region (in the southern part of Belgium – see figure 1) organizes itself around four dairy cooperatives (further defined as “mainstream dairy cooperatives”) collecting up to 97% of the milk produced (CBL 2013). Three territories, located in the eastern part of the Region (the Région Herbagère Liégeoise, its sub-part called Pays de Herve, and the Haute Ardenne), account for more of 40% of the total dairy production while they only represent about one-tenth of the entire area of the Walloon Region (figure 1).



Figure 40 : Map presenting the location of the Walloon region in Belgium and the situation of the specialized dairy territories.

These territories host one-third of the dairy producers of the Walloon Region, and up to 46% of the specialized dairy farms (farms

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registered for milk production alone, not in combination with other speculations). Dairy farming represents 75% of the farming revenues generated in these territories. Farms produce milk on grasslands (70-90% of the UAA) and forage crops (Fabry 2009; DGARNE 2012). The dairy farmers of these territories (we further define as “specialized dairy territories”) deliver their milk to two mainstream dairy cooperatives. One of the mainstream dairy cooperatives still has a local scale (1900 members over Wallonia) but is mainly active on consumption milk and the production of milk powder. Both products are strongly dependent on the price fluctuations on the world market. The other mainstream dairy cooperative is one of the biggest dairy cooperatives at European scale, with more than 12 000 members. The milk processing strategy of this dairy cooperative is more diversified, but the decentralized position of the Walloon Region within a broader entity does not favor attention to the issues of Walloon dairy farmers.

Could dairy farmers of the specialized dairy territories of the Walloon Region orient the processing of their milk towards productions with a higher added value, and gain more strategical power over the way their milk is being processed? We identified two possible options already present : (1) on-farm processing of the milk; (2) making an agreement with a processor who does not collect his/her milk from the mainstream dairy cooperatives but collects his/her milk directly from farmers (further defined as “local processor”). Milk processing on farm is a marginal practice in the specialized dairy territories : from the thousand dairy farms present [9,10], only a hundred are registered for on-farm transformation, mainly for the production of butter (Diversiferm 2018). Although these territories have had a past tradition of cheese processing, at the time of the study, only six farmers were doing cheese-processing on the farm (cow milk) (APAQ-W 2014). Concerning direct delivery of milk to a local processor, we identified only six local cheese processors collecting milk directly from a dozen farmers (APAQ-W 2014).

The scientific literature stresses the importance of alternative food networks for their transformative potential towards sustainability (Lamine et al. 2012; Goodman, Maye, and Holloway 2010; Horlings and Marsden 2011). In this regard, cheese processing alternatives (on-farm or by direct delivery of milk to a local cheese processor) are interesting because most actors do not limit themselves to direct selling and short channels of distribution but also experience distribution through long supply chains, via wholesalers.

We propose a qualitative study in the specialized dairy territories, based on semi-directed interviews with local cheese processors and farmers delivering milk to local cheese processors or producing cheese on-farm. In particular, to understand why alternatives to the delivery to mainstream dairy cooperatives do not develop more, we intend to answer the three following questions: (1) which processes does the farmer face when engaging in cheese-processing alternatives? (2) How does the exploration of an alternative channel of milk processing relate to the farming system and the way dairy farmers approach their work? (3) How is his-her intention towards a change of trajectory supported by the dairy context in which he/she evolves?

Changes of trajectories may face a logic of inertia inherent to sociotechnical systems

Several researchers have pointed to the importance path dependency and lock-ins to explain the inertia characterizing many sociotechnical systems. The central idea behind these concepts is that dominant routines in production, use of technologies, knowledge transmission, institutional and social practices orient future trajectories and hinder other pathways of development at the individual and collective level (Geels 2004; Lachman 2013; Maréchal 2012; Unruh 2000).

Following an initial paper from Cowan and Gunby (1996), many researches have applied this set of ideas in empirical studies demonstrating the locked-in nature of agricultural sociotechnical

systems. For example, supply chain organization, genetic selection, research and public support policies act in a convergent way and create an unfavorable context for the adoption of fungicide-resistant wheat varieties (Vanloqueren and Baret 2008) or the reduction of use of chemical fertilizers (Kuokkanen et al. 2017). Production standards (De Greef and Casabianca 2009; Stassart and Jamar 2009; 2005; Meynard et al. 2013) orient pathways of production and consumption. The organization of supply chains and the unbalance of strategic weight among actors act against the financial support of alternatives (Fares, Magrini, and Triboulet 2012). The organization of research and education prevents the development of an integrated approach to production issues (Vanloqueren and Baret 2009; Darnhofer, Gibbon, and Dedieu 2012; Mulder 2017).

Conceptual frames like the Multi-Level Perspective (Geels and Schot 2007; Geels 2010) consider how socio-technical systems, the “tangible elements needed to fulfil societal functions” (Geels and Kemp 2007) co-evolve with a set of rules in a “socio-technical regime” and orient the routines of social groups (Geels and Kemp 2007). In a stabilized regime, lock-ins are at the same time the consequence of path-dependent processes and the source of further path-dependency (Sutherland et al. 2012; Pesch 2015). Alternatives to the practices of the dominant socio-technical regime emerge in niches, defined as “constellations with novel, or deviant functioning” (Hans de Haan and Rotmans 2011) or “protective spaces”. In niches, innovation develops beside the selective pressure of the socio-technical regime (Geels 2004). Typically, if we refer to our specific research, this framework would make us consider the system of delivery of milk to the mainstream dairy cooperatives as the dominant socio-technical regime, and the alternatives of milk processing on the farm or direct delivery to a local cheese-processor as niches.

The frameworks considering stability and transition of systems (Geels and Schot 2007; Geels 2010; Hans de Haan and Rotmans 2011) are relevant regarding a retrospective approach of societal changes (Lachman

2013). In the agricultural sector, these frameworks have been mobilized to assess processes of transition, including recent evolutions towards a more sustainable mindset in agriculture (Marsden 2013; Darnhofer, Sutherland, and Pinto-Correia 2015). Agriculture and food production is a land-based activity, which entails, within a shared mainstream set of practices, a strong heterogeneity. Niches may not emerge as coordinated and separate spheres with transformative ambitions, but emerge from within that heterogeneity (Darnhofer, Sutherland, and Pinto-Correia 2015). When considering potential transitions in agriculture, and processes of potential transition in the making, trajectories of individuals are a relevant level of analysis (Brédart and Stassart 2017).

Change in farmers' individual trajectories is not straightforward. At the farmer's level, capital investment, risk evaluation, market configuration, capabilities of the actor act against change or against the ability of the farmer to interpret an event as a trigger for change (Sutherland et al. 2012; Brédart and Stassart 2017). In addition to lock-ins of a technical and financial nature, knowledge and cultural lock-ins play an essential part (Sutherland et al. 2012). Practical experience and formal education contribute to the emergence of lock-ins, as well as the "the adherence to mutually accepted farming ideals" within the peer group of farmers (Burton 2004b). The strength of the symbolic value attached to the "good farmer" as behavioral driver has been stressed in several studies (Burton 2004a; Burton and Paragahawewa 2011; Sutherland and Darnhofer 2012; Wahlhütter, Vogl, and Eberhart 2016). However, emphasizing structural determinism does not help to understand how change happens, and many authors emphasize the importance of considering agency aspects and the impact of the agency on changes (Kern 2015; Geels 2010; Geels et al. 2016; Fischer and Newig 2016; Pesch 2015). A change of practices implies a continuing process of shifts in meanings that interact with the identity of farmers (Burton and Wilson 2006; Rauschmayer, Bauler, and Schöpke 2015; Pesch 2015). The capabilities of farmers as condition and driver for agency and change is a subject increasingly treated the scientific literature. Capabilities are analyzed in

terms of acquired skills (Selyf Lloyd Morgan et al. 2010) but also, in approaches inspired from constructivism (Crozier and Friedberg 1977), in terms of interactions and networks (Marsden et al. 2010; Mc Fadden and Gorman 2016) and resilience (Andrade 2015; Milestad et al. 2012). One should also consider the context in which individuals evolve in order to understand how the agency may exert itself (Avelino and Wittmayer 2016; Pesch 2015; Darnhofer, Gibbon, and Dedieu 2012; Grin, Rotmans, and Schot 2010; Giddens 1984; Fischer and Newig 2016; Jan Douwe van der Van Der Ploeg 2003).

Studies focusing on the dairy sector specifically center on the general context and trends of evolution of the dairy sector in Europe and elsewhere (Britt et al. 2018), or on the way sustainability is integrated at the farm level (Chen and Holden 2018; Bijttebier et al. 2017; Llanos, Astigarraga, and Picasso 2018) and by the processing actors (Villarreal Herrera, Wiskerke, and Schans 2017; Evrard et al. 2016; Hoes, Beers, and van Mierlo 2016). Concerning individual trajectories and their relation with the dairy context, we identified a few studies focusing on decision-making processes of dairy farmers in reaction to a certain economic context (Ragkos et al. 2015; Hansson and Ferguson 2011), or in reaction to the evolution public policies (Barnes et al. 2016; Maes and Passel 2017). In both cases, the focus lies on the strategies of farmers regarding their farm models and the way they might make it evolve. By focusing on the individual trajectories as the level of analysis, we intend to understand which contextual factors interact with the individual's ability to consider pathways of change towards a greater diversity of options for processing of milk in specialized dairy territories of the Walloon Region. Our objective is to understand the issues faced in the alternatives to the delivery of milk to mainstream dairy cooperatives (on farm cheese processing or direct delivery of milk to a local cheese processor) and the reason why these alternatives remain marginal.

1.2. Materials and Methods

We designed a qualitative study based on semi-directed interviews with the actors active in the above-mentioned alternative trajectories (on-farm cheese processing or direct delivery of milk to a local cheese processor). This approach has been mobilized to study food systems (Deverre and Lamine 2010b), from change at the farm level (Vanloqueren and Baret 2008) to social perceptions related to food production (Gaspar, Escribano, and Mesias 2016; Hoek et al. 2017). The relevance of qualitative approaches for understanding complex systems is now recognized (Kaivo-oja 2016; Tran et al. 2016).

We adopted a “grounded theory” approach (Corbin and Strauss 2015), taking into account what the data collection revealed beyond any theoretical hypothesis. We fed our interpretation with the help of the described conceptual framework on the stability of systems and change at individual level.

We placed our focus on the specialized dairy territories of the Walloon Region given the importance of milk in the farming revenues. We identified farmers and local processors in the online data of the regional agency for agricultural promotion (APAQ-W) (APAQ-W 2014) and a published guide of Walloon cheese-makers (APAQ-W 2013). We ensured that our sample was representative of all types of actors present in the studied alternatives: farmers and local cheese processors (Table 15). Fifty percent of the local cheese processors and of the farmers doing (or having done) cheese processing on farm, eighty percent of the farmers delivering to a local cheese processor, accepted an interview (Table 15). We looked for farmers having stopped or who refused direct delivery to a local cheese processor. The only one we found refused an interview.

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Table 15 : Qualitative sample distribution for interviews investigating challenges for farmers of the specialized dairy territories of the Walloon region, who process milk on farm or deliver milk directly to a local cheese processor, and for local cheese processors who collect milk directly from farmers

	Local Cheese processor (who collects milk directly from farmer)	Farmer processing or having processed milk on farm	Farmer delivering milk directly to a local cheese processor
Identified in the specialized dairy territories of the Walloon Region and contacted for an interview	6	9	12
Accepted an interview	3	5	10

We interviewed five farmers active in cheese processing on the farm (fc-1 and fc-2) or who had stopped cheese processing on the farm (fnc-1, fnc-2, fnc-3). We interviewed three local cheese-processors (cp1, cp2, cp3) and ten farmers delivering their milk to local cheese-processors (fm-1 to fm-10). Our interviews covered equally the three territories of our geographical study area.

Six of the ten farmers delivering their milk to local cheese-processors were of male gender and worked alone on the farm (fm2, fm3, fm4, fm6, fm8, fm9). The four other farmers delivering their milk to local cheese-processors ran their farm as a family business with several members of the family involved (man, wife, sons and daughters). We interviewed the man in two cases (fm1, fm5), and man and wife in a common interview in two cases (fm7, fm10).

In the case of the farmers processing on farm, farmers ran their farm as a family business too. In one case (fc2), we interviewed man and wife in a joint interview, in one case the wife (fnc-2), and in the other cases, the man alone (fnc1, fnc3, fc2).

The interviews took place between November 2013 and January 2014. We asked the interviewees to (1) present their activities and their history; (2) identify the factors of success (3) and the constraints in their trajectories.

The interviews were audio-recorded and transcribed. We used the software RQDA to attribute thematic codes (Huang 2016) to interview parts, and extracted them for analysis. We defined the codes according to our objective of and enriched them with elements identified as relevant during data collection. The extracts constituted our material for interpretation.

1.3. Results

1.3.1. Exploring a cheese-processing alternative entails adaptations regarding farm model and reveals lock-ins acting against changes of pathways for farmers

1.3.1.1. The requirements linked with cheese processing influence the farm model and practices

A farmer wishing to engage into cheese processing alternatives may choose to transform cheese on the farm. One main obstacle to on-farm cheese processing is the absence of familial resources available to add this activity to the running of the farm. When this on-farm processing is not an option, the farmer relies on the existence of local cheese processors willing to collect his milk.

Both farmers doing cheese processing on farm and farmers delivering their milk to local cheese processors adapted their farm

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practices. The interviewees link the adaptations to requirements in terms of milk properties (taste, protein content, and absence of certain germs). The adaptations also concern the quantity of milk produced during the year. Milk produced on grasslands is more abundant in spring: farmers organize their calving season at this period of the year to support the lactation peak with the spring grass. However, the demand for cheese is more abundant in winter. Finally, the adaptations concern the distribution of risk between milk suppliers: having numerous small-scale suppliers is less risky than a unique milk supplier.

Table 16 summarizes the practices adopted by the farmers to meet the requirements linked to cheese production. Some practices answer the requirements directly. Other practices answer the requirements indirectly, in the way that they offer a better economic efficiency to the farmer.

Table 16 Requirements linked to cheese processing influencing the farm model and practices of farmers of the specialized dairy territories of the Walloon Region, who process milk on farm or who deliver milk directly to a local cheese processor

Requirement	Influenced by	Constraint for farmer linked with requirement	Practice answering the requirement* or providing a better economic efficiency**
Gustative quality of milk	Feeding	Limitation in the use of concentrates Farmer has to make silages that are less acidic, that is, dryer silages – less nutritional value and higher processing costs (realization of bales necessary)	Extensive milk production** Autonomous realization of clamps (no recourse to sub-contractors to harvest the grass and make the silages, so that the farmer can take the necessary time to ensure a thorough compacting of the dryer silages)**

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	Sanitary status of the cow		Extensive milk production* More rustic cow breeds*
Cheese-processing properties of milk	Cow selection – cow breed		Selection of another cow breed than the Holstein, or crossings*
Sanitary quality of milk	Sanitary status of the cow and feeding	Farmer has to make dryer silages to prevent the development of undesirable microorganisms – less nutritional value and higher processing costs (realization of bales necessary)	Extensive milk production* Rustic cow breeds* Autonomous realization of clamps (no recourse to sub-contractors to harvest the grass and make the silages, so that the farmer can take the necessary time to ensure a thorough compacting of the dryer silages)**
Distribution of risk among milk producers	Number of milk producers	Farm has to be small-scale	Small-scale farm*
More milk production in winter	Calving season in autumn	Additional feeding costs linked with the displacement of the lactation peak in winter to answer the needs of the local cheese processor	Extensive milk production – low-input approach regarding feeding**

1.3.1.2. Lock-ins act against changes of pathways for farmers

Interviewed farmers are well aware that their farm model clearly/typically does not follow the broader trend toward large-scale

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intensive dairy farms based on the Holstein breed (fc1, fc2, fm2, fm3, fm7, fm8, fm9), also described in the scientific literature (Jongeneel et al. 2010).

They point out elements that reinforce this trend to large-scale intensive farms (Table 17):

1. Mainstream dairy cooperatives work with a payment system in function of the quantity delivered by the farmer: they give a bonus payment per liter as from an annual quota of 540 000 liters (fm3);
2. Mainstream dairy cooperatives are more and more reluctant to collect milk from small-scale farms: interviewees mention the fact that small-scale farms turning around 100 000 liters a year had been refused collection (fm7, fm3);
3. The public agricultural advisers encourage farmers to grow in size and invest in equipment. The advisers recommend the use of regional aids dedicated to agricultural investment in the frame of the European rural development program (fc1, fm9);
4. The loan policies of banks are not favorable to small-scale projects (fm3).

Local cheese processors do not easily find farmers meeting their requirements (gustative, sanitary and cheese-processing quality of milk, farm-scale). Local cheese processors look for a farmer whose farm model corresponds to their requirements or who is willing to make the necessary adaptations. This means sometimes driving more kilometers to collect the milk. The interviewees also identify a cultural lock-in acting against the consideration of change: the sense of security linked to mainstream dairy cooperatives. Although this pathway is less satisfactory regarding personal value and remuneration (cp3, fm3, fm7, fm9, fm10), most mainstream dairy cooperatives are “too big to fail”: they will benefit from support in case of difficulties. A local cheese processor, conversely, could go bankrupt or decide to reduce the volume of his production (cp2, cp3, fm3). Furthermore, some banks take into account where the farmer delivers its milk before granting a loan, leaving farmers who do not

deliver milk to mainstream dairy cooperatives in a situation of uncertainty (fm3).

The interviewees identify the high workload in large-scale intensive farms as a technical lock-in: the attention of farmers is drawn by the sole production of milk, which prevents the consideration of a change of pathway (fm7, cp3). Heavy investments in milking and farm equipment hinder changes in farming or milk processing practices (cp3, fnc2, fnc3) and reinforce the reluctance to leave a mainstream dairy (fm9, fm10).

Interviewees also raise the issue of agriculture schools: they prepare dairy farmers to be milk producers solely (cp3, fm1). Interviewees noted that schools and public advisors advocate for farms growing in size and following intensification pathways (fm9, fc1). Farmers are more educated than ever but do not learn to have a system-oriented vision of agriculture (fc1). Furthermore, farmers-to-be follow education programs in specific schools, as from the age of 12 years old. They consequently develop a shared vision about farming mainly based on intensification, growth and high investments in equipment (fc1, fc2, fm3, fm7, fm9).

Table 17 : Lock-ins identified by the interviewed farmers and local cheese processors of the specialized dairy territories of the Walloon Region, acting to prevent farmers from considering changes of pathways, in terms of farm model and choices of milk processing

Lock-ins acting against changes of pathways of change by farmers
Mainstream dairy cooperatives offer bonuses as from a certain quantity of milk and are reluctant to collect milk from small-scale farms
Dairy farmers share a common vision about farming practice based on intensification, and the education of farmers contribute to this common vision
Public agricultural advisers and banks support farming practices based on intensification, growth and high investment
Dairy farmers define themselves as milk producers
The high workload on farms and the heavy investments in farm equipment hinder changes in milk processing practices
Mainstream dairy cooperatives offer a sense of security

1.3.1.3. How did the interviewees themselves experience lock-ins in their own trajectories and pathways of change?

We identified two pathways of changes. For some of the interviewees, quitting the mainstream dairy cooperative was a conscious decision to explore new ways of processing their milk (fm3, fm7, fm8, fm9, fm10). They were dissatisfied about the anonymity of contacts and the loss of control over the processing of milk in mainstream dairy cooperatives. For other interviewees, exploring an alternative pathway was a question of opportunity, either because a local cheese-processor was looking for organic farmers (fm1, fm2, fm6) or because of the geographical proximity with a local cheese-processor (fm4, fm5).

In five cases (fm3, fm4, fm5, fm6, fm9), changing trajectory also meant quitting a more intensive model in terms of production per cow. Others had already gone from an intensive towards a more extensive mode of production earlier on. They kept on adapting their farm to the requirements of cheese production within that trajectory (fm1, fm2, fm7, fm8, fm10). The interviewed farmers mention disapproval from other farmers (family members, neighbors, members of farmers' unions) when they decided to leave a mainstream dairy cooperative and process their milk in another way (fm7) or when they changed their way of farming towards more extensive practices (fm2, fm7, fm10). According to the interviewees, this shared vision orienting practices towards intensification is stronger in the "Pays de Herve", where less diversity regarding farm model exists in comparison with the "Haute Ardenne". One interviewee, coming from the Pays de Herve, chose to stop on-farm cheese processing when she engaged in an intensification and growth pathway of her farm (fnc 2).

1.3.1.4. Did a change of trajectory influence their approach of farming practices?

Many interviewees describe their change of pathway as satisfactory, because of a more stable remuneration (fm1, fm3, fm4, fm5, fm7, fm8,

fm9, fm10) and a closer connection with the products processed with their milk. They also appreciate the human side of the connection with the local cheese-processor (fm2, fm3, fm4, fm6, fm7, fm8, fm10). One interviewee (fm9) linked his differentiated vision about farming practices – no longer based on intensification and growing in scale - to the fact that he got the opportunity to deliver his milk to a local cheese processor. This example suggests that cultural conceptions are rooted in the organizational, technical and financial context in which farmers evolve.

Nevertheless, among the farmers, we also noticed that the idea of being a milk producer remained strongly rooted: the idea that they do not have the time or the competences to be involved in the processing of the milk was often expressed (fm2, fm3, fm4, fm6, fm9, fm10).

1.3.1.5. Interviewees identified in their history what helped them to overcome the obstacles

Interviewees cite three main factors explaining the success of their alternative trajectories, despite the lock-ins (Table 18):

1. Family and network connections act positively on a change of path. Prior contacts with local cheese processors, for example through organic unions, are sources of opportunities for farmers (fm7, fc2). The implication of family members is an asset to process cheese on the farm or to invest time and energy in cooperative schemes with local cheese processors (fm7).
2. Competencies and mentality are essential factors to succeed in alternative pathways. Interviewees recommend to think out of the box and not to listen to advice from others (fc1, fm9). The experience gathered outside of the agricultural world is an asset in terms of mentality and acquired competencies (fm7, fc1, fc2). For this reason, one interviewee decided not to put his children in an agricultural school (fm7).
3. A positive feedback linked to the satisfaction reinforces the confidence in the trajectory of change.

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Table 18 : Factors identified by the interviewed farmers of the specialized dairy territories of the Walloon Region, that helped them overcome the lock-ins preventing farmers to consider changes of pathways from delivery of milk to mainstream dairy cooperatives, to cheese processing on farm or to direct delivery of milk to a local cheese processor.

Factors that helped the interviewed farmers consider a change of trajectory

Social networks and the involvement of the family are sources of support and new opportunities

Ability to think out of the box

Experience gathered outside of the agricultural world

A positive feedback reinforces the confidence in the trajectory of change

1.3.2. Local cheese processors also experience lock-ins acting against the exploration of alternative pathways of food production

1.3.2.1. Local cheese processors experience constraints acting against direct milk collection

Local cheese processors favor direct milk collection to control its features – taste, protein content, hygiene (cp1, cp2, cp3, fc1, fc2). Additionally, processing milk in a shorter timespan since milking guarantees a more stable protein configuration and increases the efficiency of milk processing (cp2). However, milk collection is costly and local processors do not necessarily find the ideal farmer nearby (cp1, fc1, fm3, fm4, fm6, fm7, fm8).

The milk collection policies of mainstream dairy cooperatives create a lock-in effect of an organizational nature against direct milk collection by local cheese processors. Mainstream dairy cooperatives do not tolerate variations in the quantity of milk delivered by a farmer (fnc1, fm2, fm5, fm10). Furthermore, mainstream dairy cooperatives do not see favorably that local processors collect milk directly from farmers: as local processors pay the milk at a better price⁷², this raises the question of milk price paid

⁷² When the milk price is high on the world market, some farmers note no substantial difference between the price they receive and the price given to farmers in the mainstream cooperative dairies (fm1, fm3, fm3, fm7, fm10). However, the price they

to other farmers by mainstream dairy cooperatives (fm5). This situation leaves the local cheese processor with two options. The first possibility is to collect the total production of one or more farmers. This can be a problem for small-scale local cheese processors, as they cannot ensure to manage such a quantity of milk (fm10, cp3). The second possibility is to let mainstream dairy cooperatives supply them with milk. This option means relying on standardized milk for cheese production and losing control on the specific features of the milk.

Local cheese processors overcome this lock-in by concluding contracts with newly created cooperatives of dairy farmers valorizing their milk on the European markets (cp3). The difference in size may affect the power of negotiation regarding milk price. It is also tempting for these cooperatives to conclude exclusive delivery agreements to bigger processors to the detriment of smaller ones.

1.3.2.2. Interviewees consider that their small-scale businesses face distribution pathways not adapted to their needs

Cheese production generates whey and cream (when the cheese processor uses skimmed milk (cp1, cp2, cp3). The elimination of whey and cream as is costly, and there is no market available for the small quantities produced (cp2). Calves and/or pigs can consume whey and this is how farmers doing on-farm cheese processing valorize this by-product (cp1, fc1).

The direct sale of cheese is not an option in most geographical areas covered: the location of farms or cheese-processing factories (fc2, fnc3) is remote and local consumers favor mass retail (fm9, fnc3, fm7). One

receive remains stable whereas the milk price drops in mainstream cooperatives dairies when the milk prices drop on the world markets (fm1, fm3, fm3, fm7, fm10). Some farmers (fm2, fm5, fm6, fm8, fm9) talk about a price difference with the payments in mainstream dairy cooperatives that can amount to 10-15 cents/liter milk (fm8, fm9). Some local cheese processors pay better than others do (fm8, cp1). The possibility to discuss with the cheese processor and the balance of scale between the farmer and the cheese processor play a role in the milk price negotiation (fm5, fm8).

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farmer situated near an urban center developed direct sale successfully (fnc1). Some experienced sale on markets, which is very demanding in time and energy (fc2, fnc3). Price is an issue, as consumers remain mainly price-driven (fm8).

Local cheese-processors mainly cooperate with generic wholesalers for the distribution of their products to specialized and mass retail. There is one wholesaler dedicated to small-scale organic productions. This wholesaler distributes products to specialized retailers and catering services. The interviewees feel uncomfortable in front of generic wholesalers focusing on quantities, promotional plans and price-driven competitiveness (fnc1, fnc2, fc1, fc2, fm7, fm8, cp3). Wholesalers are reluctant to collect small amounts of products, especially when the local cheese processors are geographically remote (fc1, cp1). The commercial relations with generic wholesalers are difficult (fnc2, fc1, fc2, cp3): there is an imbalance in power of negotiation (fnc2, fc1, cp3) and pressure on quantities and price (fc1, fc2, fm7).

When they upscale and produce larger quantities of cheese, cheese producers face requirements of mass retailers (packaging and promotional schemes) not sustainable for small-scale structures (fm7). Durable life date systems imposed by mass retailers are not always adapted to products like cheese, as cheese products gain gustative value by aging rather than worsening (fm7). When they upscale, local cheese processors rely more than before on generic wholesalers and mass retail. Some interviewees, therefore, prefer to remain small-scaled and rely more on specialized distribution pathways (fc1, fc2).

1.3.2.3. Interviewees identify the elements that might alleviate the constraints on their businesses

The interviewees cite two main factors contributing to the success of their trajectories of cheese processing:

1. Experience in business matters outside of the agricultural world provides competencies in management (fc1).
2. Interviewees appreciate the existence of a dedicated wholesaler specialized in organic, small-scale farm productions. This wholesaler makes access to specialized retailers easier and less time-consuming (fc2, fnc1). Interviewees appreciate not having to lose time and energy on marketing issues (cp1). They would like specialized retailers to emphasize more on local cheese production (cp3, fm7).

Interviewees consider that more organization among local cheese processors would be useful to defend their interests (cp1, fc1, fc2, cp3). By the time of the study, there was no collective organization to promote small-scale non-industrial cheese productions. Interviewees mention a general mentality not oriented towards collective action in the concerned territories, in opposition to other European countries where farmers and local processors were more collectively organized (cp1, fc1, fc2, cp3).

1.4. Discussion

1.4.1. Our study identifies a set of coherent lock-ins limiting alternatives pathways of farming and milk processing

We identify in our results a relation of reciprocity between the farmer, his-her practices and visions about his-her practices, and the local cheese processor, or the cheese-processing activity on farm. Local cheese processors wishing to collect milk directly are dependent on the existence of farmers capable to meet his-her requirements. On the other hand, farmers will not be encouraged to maintain a farm model meeting the requirements of cheese processing if no perspective in this direction is present.

Beside technological, cultural and ‘knowledge-driven’ lock-ins, this study brought forward a type of lock-in we call ‘organizational’. The way actors organize/structure themselves in the broader dairy context

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(mainstream dairy cooperatives, educational and counseling systems, public policies, banks, retail and distribution, consumers – we define these actors and the way they organize themselves as “mainstream dairy context”) leads to the disqualification of other ways of farming and of processing food.

The results draw the picture of a mainstream dairy context structured with coherence. This coherence limits the potential of differentiated ways of creating and processing milk (Figure 41).

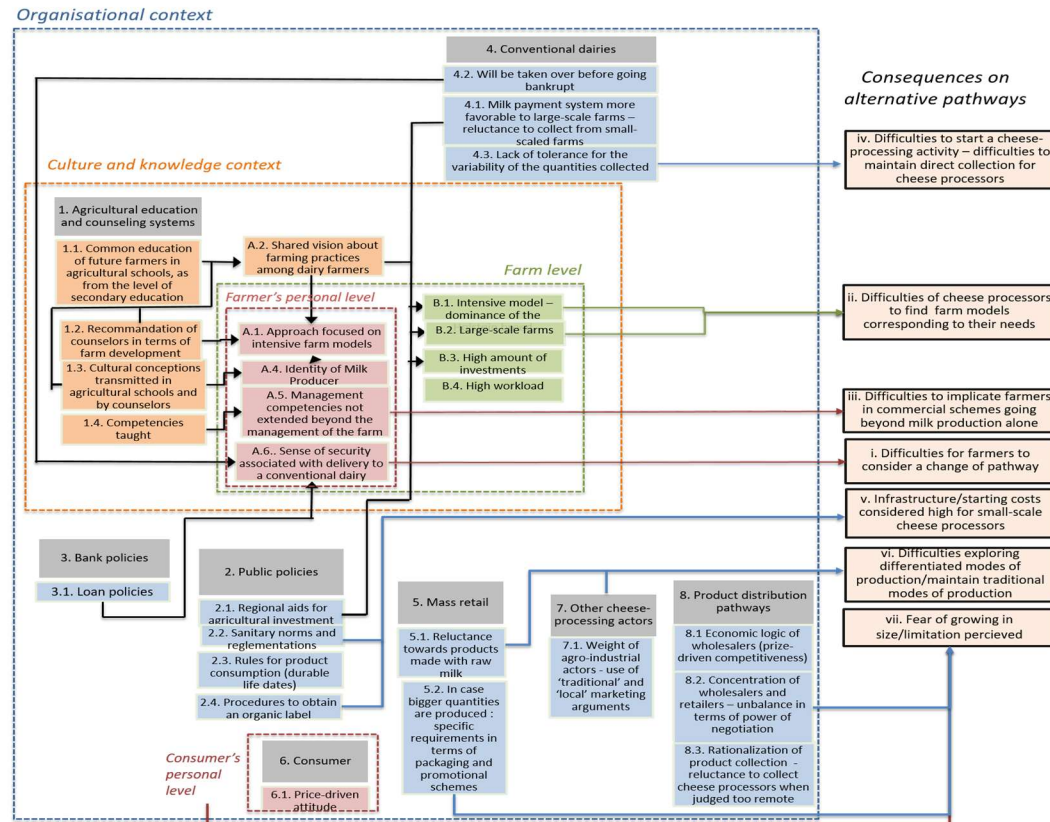


Figure 41 : The coherent action of lock-ins on cheese processing alternatives

At the farm level, the needs of the mainstream dairy cooperatives for standardized milk and the subsequent payment strategies orient the farm model. The organization of the distribution pathways and the consumer's attitude make local cheese processors limit their market approach. De Greef and Casabianca (2009) describe a similar sectoral structure in the Dutch pork chain, driven by commodity-logics and standardized quality. Diversification towards less "standard" productions fails "because of price effects" and a reluctance of processors and of the retail sector to consider and support alternatives. They similarly notice a direct consequence of this organization on farms, lead on "an industry-driven route of increasing size and efficiency". De Greef and Casabianca (2009) in the case of the Dutch pork chain and Fares, Magrini and Triboulet (2012) in the case of the French wheat supply chain stress the non-integration of the value chain, that is the absence of a link between farmers and the downward processing structures. These authors attribute to the non-integration of the value chain the difficulty to consider and support strategies for change. Concerning our case study, we might notice that the milk sector seems more integrated than the Dutch pork chain (De Greef and Casabianca 2009) or the French wheat supply chain (Fares, Magrini, and Triboulet 2012). Mainstream dairy cooperatives hold a vertical link between dairy farmers and the milk processing structures. Nevertheless, their present configuration leaves the farmers with little strategic power (Juliá-Igual, Meliá-Martí, and García-Martínez 2012; European Milk Board 2012).

The coherence of the mainstream dairy context seems to be a good illustration of a locked-in socio-technical regime (Lachman 2013). This socio-technical regime seems to have followed a path of co-evolution: public policies, educational systems and consumers' behavior are in line with the agro-industrial pathways of milk processing and distribution. The organization of the socio-technical regime orients the farm model and constraints the ability of individuals to act on an alternative paths. In the case of the French wheat supply chain, Fares, Magrini and Triboulet (Fares, Magrini, and Triboulet 2012) described a supply chain strongly

concentrated downward the farm-level. They stressed that this concentration generated structural lock-ins: downward concentrated actors have a power of negotiation over other actors and use inter-professional agreements to impose production standards. Upward actors, especially farmers, have little space left to engage in alternative production or transformation pathways, and if they do so, have to support significant personal risk. Our study reveals similar lock-ins concerning the Walloon mainstream dairy context. Local cheese processors and farmers delivering milk directly to them evolve in a relation of reciprocity. They experience lock-in effects tending to make them move away from that reciprocity. There is a reinforcing effect of the mainstream dairy context against alternative ways of processing milk.

The impact of this context is not constant over the studied territories. Small-scale extensive farms still present in the territory Haute Ardenne may more easily answer the requirements of local cheese processors. This resonates with what Morgan et al. (2010) and Murdoch et al. [82] noticed : not all environments present the same “ecological conditions” for the development of alternative models of food production. Territories “that have not been fully incorporated into the industrial model of production”(Murdoch, Marsden, and Banks 2000) or "where opportunity for large-scale, intensive and industrial farming has been restricted" (S.L. Morgan et al. 2010) are more likely to host a greater diversity of farm models, and hence, to host differentiated food systems.

1.4.2. The locks-ins embed the farmer’s frame in the organizational frame of the mainstream dairy context

If we consider the agency of farmers, this case study reveals how a set of lock-ins belonging to the farm-model frame and the more general cultural and knowledge frame determines the farmer's individual frame, regarding competences, identity or consideration of risk. The organizational frame of the mainstream dairy context embeds both frames (Figure 41).

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Figure 41 stresses the embedded aspects of path dependency: the interactions between frames equip actors with competencies in line with the needs of the socio-technical regime. At the farmer's level, (Figure 42), organizational lock-ins contribute to orient farmers towards large-scale farm models, whose practices contribute to feed the identity of the farmer as milk producer. The farmer defines him/herself as such and reinforces in turn his-her potential of action within the coherence of the mainstream dairy context. Our results illustrate that path dependency involves a process of interaction between collective and individual frames: agents are embedded into the coherence of the socio-technical regime and contribute, through their actions, to the further coherence of the regime in which they evolve (Pesch 2015).

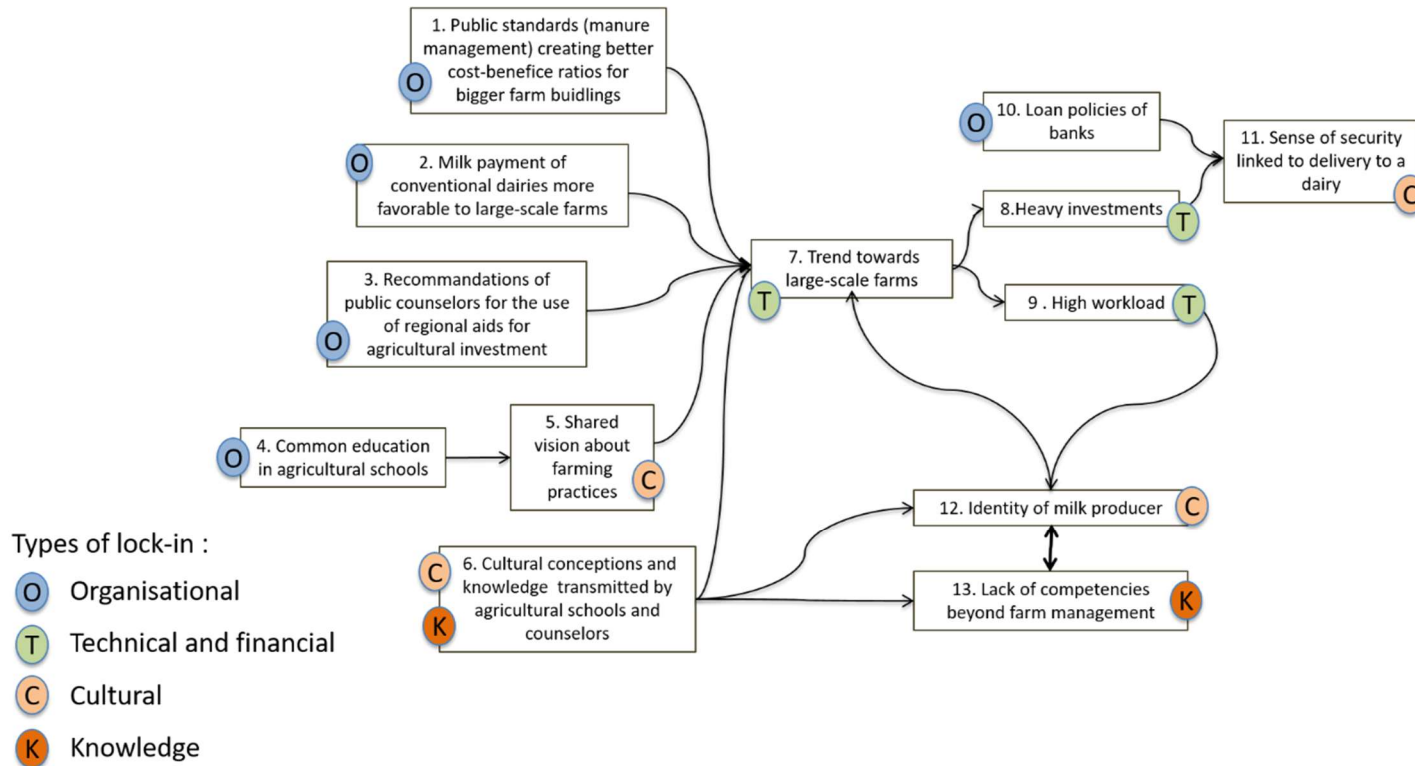


Figure 42 : Lock-ins acting and reinforcing themselves at the farmer’s level.

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1.4.3. Our study identifies agency at the crossover of top-down and bottom-up processes

Our study stresses how the wider organizational frame of the mainstream dairy context embeds the farm model and the farmer's individual frame (figure 2). One interviewee (Results, point 1.3.1.4) draws a link between the evolution of his vision about what he sees as "good farming practices", and his experience of milk delivery to a local cheese processor. Such a phenomenon, also described in other case studies (Sutherland and Darnhofer 2012) and theoretically discussed (Burton and Wilson 2006; Rauschmayer, Bauler, and Schöpke 2015) suggest that change in farming practices can lead an individual to perceive differently the farming context in which he evolves and question the cultural lock-in he had previously integrated.

Our findings suggest that we might foster changes in farming practices, and hence in the farmer's approach regarding farming, by supporting agro-food supply chains based on a differentiated milk quality. Support to differentiated food chains has to take into account the need for dedicated services in terms of distribution of products, risk management and adequate representation. The interviewees note that the mainstream distribution systems are not adapted to their needs and hold features of unbalance of power due to the concentration of actors present (results, point 1.3.2.2). They call for the development of a network of wholesalers and retailers more dedicated to local and small-scale production. If indeed the market turns out to be an "obligatory passage point" as stated by Renting and Marsden (Renting, Marsden, and Banks 2003) citing Callon (Callon 1984), it will be necessary to organize this passage point. Beyond collective representation (see results, point 1.3.2.2) this probably calls for a reflection on the appropriate networks to develop, going beyond the sole – often studied (Deverre and Lamine 2010b) – direct distribution networks (Born and Purcell 2006; Kremen, Iles, and Bacon 2012).

In terms of public policy, our study stresses that alternatives rely on specific farm models. Defining support policies guaranteeing the persistence of a diversity of farm practices may, on a long-term basis, prove beneficial as support to a greater variety of types of rural development.

Finally, at the individual, level, which factors allowed interviewees to exercise agency in favor of change despite the existence of lock-ins? We identify five factors:

1. The ability to question the shared vision about farming practices among dairy farmers;
2. The ability to stand against reprobation from neighbors and family members;
3. Competences going beyond farm management solely;
4. A familial implication in the farming-related business;
5. The resort to a prior network of connections.

Previous case studies also identified these factors as drivers for change (Mc Fadden and Gorman 2016) (factors 1, 2, 3, 5) (Andrade 2015) (factor 4). In more theoretical articles, authors also stressed the importance of knowledge as a source of individual power (Avelino and Rotmans 2011) and the interpersonal network around the individual as a source of adaptability and resilience (Milestad et al. 2012).

When we consider the education of farmers, as described by the interviewees (see results, point 1.3.1.2), we understand that its purpose is to equip farmers with a strong technical background. This logic makes sense in the eye of the national and European agricultural policies as they have been defined throughout the twentieth century (Milestad et al. 2012) : gathering farmers together from a young age can ensure the integration of common standards and practices. Our results suggest that a modification of educational policy might be favorable to a greater adaptability of farmers today:

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1. In terms of content: adaptability depends from management competencies, beyond the technical aspects of farm production or farm management. Would it not be relevant to integrate these elements in the educational programs? Do programs sufficiently equip dairy farmers in terms of capability and adaptability?
2. In terms of organization: would an education of farmers less separated from other professions not allow greater openness to competences and networks that might prove useful concerning their adaptability to a changing environment?

This study invites to consider the role of agency in transition processes as a dialectic process, at the crossover of the individual's or network's capabilities and structural changes in the organizational and cultural environment. In this regard, our study ties up with the most recent theoretical discussions on how to approach processes of change (Darnhofer, Sutherland, and Pinto-Correia 2015; Gallo-Cruz 2017). Generally (Gallo-Cruz 2017) and in the agro-food sector (Darnhofer, Sutherland, and Pinto-Correia 2015), change is a constant co-evolution of top-down and bottom-up (Gallo-Cruz 2017), “diffuse and intermingling” (Darnhofer, Sutherland, and Pinto-Correia 2015) processes.

The identification of the link between agency and structural dynamics emerged from an assumed methodology putting the emphasis on the study of individual trajectories. The study revealed a web of context-linked features whose significance goes beyond the contingencies of individual trajectories. Indeed, the trajectories taken as a phenomenological lens (Kaivo-oja 2016), not only disclosed characteristics of the mainstream dairy context in line with previous studies on the agro-food sector (De Greef and Casabianca 2009; Fares, Magrini, and Triboulet 2012; Sutherland and Darnhofer 2012; Mc Fadden and Gorman 2016; Andrade 2015; Milestad et al. 2012; Murdoch, Marsden, and Banks 2000; S.L. Morgan et al. 2010). They also revealed the grip of the context on individual trajectories. The combined

comprehension of the web of convergent and interconnected lock-ins and of the way actors managed to overcome lock-ins holds a significance that goes beyond the particular trajectories of actors. This research calls for further and broader inquiry on the contextual embeddedness of the identity and strategic choices of farmers.

1.5. Conclusion

The analysis of alternative pathways of milk processing revealed convergent and interconnected lock-ins originating from the mainstream dairy context. Our study stresses the strength of lock-in on the agency of actors. The interconnectedness of lock-in goes from the organizational frame of the socio-technical regime to the capabilities and identities of actors. Our study stresses that the organizational frame of the agro-food regime influences farm practices and that local processors may support another evolution of farming models. Pathways of transition might be favored by acting on the organizational lock-in present, at the level of the education of farmers and in the organization of the distribution pathways.

Our approach mobilizes a combination of evolutionary approaches on transition and considerations on individual pathways of change. The Multi-Level Perspective states that alternatives develop through the emergence of protective spaces called niches (Geels 2004). Rather than a niche configuration, our study revealed the embeddedness of alternatives into the environment in which they emerged. The embeddedness affects how individuals perceive their environment, has consequences on the opportunities actors may seize and on which personal resources they may mobilize. Rather than endorsing a deterministic approach about agency, our study stresses that individual empowerment is a matter of connections, experience, and education and that drivers for transition lie at the crossover of actors' empowerment and systemic change.

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2. PREPRINT - Individual drivers of farming practices: insights on the interplay between practices, context and identity

Preprint based on the data gathered by the master students Claire Pirlot and Mathieu Weinreb-Willard (co-authors).

Abstract

The farming styles framework centers the influence of farmers-peers as drivers of the farmer’s own ideals and practices. This paper addresses the challenge of mobilizing this framework in territories with a heterogeneous farming practices, where the boundaries between group(s) of farmers are not straightforward. We conducted a qualitative investigation among dairy farmers of the Walloon Region on the base of a crossover between the farming styles framework and the social-psychology concept of identity. The investigation uncovers that the interviewees’ identities are useful proxy-indicators of ideals and practices, which are also influenced by how the farmers interpret the constraints they face. We propose an adaptation of the farming style’s framework to account for the dialectic feedback effects from observation and experience on the way the farmers act. In heterogeneous or transitioning landscapes, this approach offers a grip into the boundaries between farming styles, and how to monitor their development over time.

Keywords: farming styles; identity; farming practices; behaviour; group boundaries; individual transition.

2.1. Introduction

For several years, the topic of milk production has taken a central part in societal debates. On one hand, the difficulties faced by farmers in making a living (Hemme, Uddin, and Ndambi 2014; Hemme and Dairy

researchers participating in the IFCN 2015; European Milk Board 2017a; 2017b) generate questions. On the other hand, reports question the environmental impact of agriculture, and particularly agriculture related to livestock (Steinfeld et al. 2006; Greenpeace 2019). Many actors, from multilateral stakeholders (De Schutter 2014) to citizens' associations (Nature et Progrès 2016; CIWF 2015), express the view that we must change our ways of producing food. However, change is not an easy process, particularly at farm level. Farmers act within a trajectory determined by path-dependency logics and lock-ins, contributing to shape sets of shared practices, or farming styles (Sutherland et al. 2012; Burton and Paragahawewa 2011; Burton 2004a). Hofstee (1985) defined the farming style as "a set of notions, norms, knowledge, experiences etc., held by a group of farmers in a specific region that describes the way farming practices should be carried out. Farming styles define "distinctive and valid ways of farming that are shared by a large group of farmers" (J.D. Van Der Ploeg 2010). The concept applies to "the different opinions on how farming ought to be organized and to the associated differences in the practice of farming" (J.D. Van Der Ploeg 2010). As such, styles are useful to characterize the sets of shared behaviours and practices of farmers (Sutherland et al. 2012; Vanclay et al. 2006). The concept of farming styles has been widely mobilized in literature (Fairweather and Klonsky 2009), for example to categorize and study local farming practices (Beaton 2019), or to highlight the distinctive features of dominant/conventional farming practices and alternative/more sustainable farming practices (van der Ploeg and Ventura 2014).

Following earlier criticism (Howden and Vanclay 2000) that farming styles, beyond categorization, did not necessarily match with the farmers' individual practices, Vanclay et al (2006), proposed a model to account for the discrepancy between styles considered as ideals and styles considered as sets of practices. The authors propose a framework refining the farming styles. The farming style of a farmer is a unique combination of

an ideal style defined at the level of the individual, built under the influence of historical and social influences. The social influence expresses itself through parables – or shared discourses among farmers- related to farm practices. The historical influence expresses itself through a repertoire of usual strategies to make decisions. The farmers define themselves on the base of these influences. They further put this ideal style in practice through a negotiation that involves contextual influences (the market, the information gathered through peer interaction, the influence of the structural factors of the supply chain) and personal factors (financial and personal situation). These refinements to the farming styles approach have been further mobilized in detailed qualitative studies on farmers’ decision-making and implementation of strategies (for example Dominici, Boncinelli and Marone (2019) or Preissel, Zander and Knierim (2017).

Vanclay et al (2006) considerably refines the approach of the farming styles by considering the variety of influences that may affect this individual enactment of practices. This evolution partly answers the criticism that farming styles do not explain how change may develop at the farmer’s level (Sutherland et al. 2012). However, Vanclay’s framework remains aligned with the original farming styles model: it mainly sees the farmer as belonging to a group of farmers. Indeed, the definition of the ideal, at individual level, derives from of a shared repertoire of parables and of strategies. Parables are collectively constructed judgements about other farmers acting as a form of social control mechanism, as opposed to what the farmer ought to be. Strategies are the options, the “set of practical guidelines and/or rationales” (Vanclay et al. 2006) to deal with a particular situation, at the crossover of knowledge, experience and social judgement. It is on these collectively shared bases that the farmer defines his/her ideal farming practices as “the conceptualization of their own notion of what constitutes ‘good farm management’” (Vanclay et al. 2006). What further defines his/her effective practices, is a process of

negotiation where the personal situation (family, debt situation) and general context (market, pedo-climatical features of the farm) are taken into account by the farmer.

We identify two issues related to the mobilization of the above-described framework, in particular in territories with an important heterogeneity of farming practices : 1) how do we define the boundaries of “the group the farmer belongs to”? Will we encounter one or more groups with homogeneous sets of parables? 2) This approach defines the farmer in opposition to other farmers who are not part of “his group”. How does the way the farmer defines him/herself and his/her role affect his/her ideals and effective practices?

These questions are particularly relevant when considering the case of the Walloon dairy farmers. The region holds a diversity of dairy farm models, from intensive maize and grass silage based production to extensive pasture-based models. Additionally, there are different farming orientations, from specialized dairy farms (about 50% of the farms) to more diversified dairy farms, combining crops or meat cattle breeding with dairy farming (Petel, Antier, and Baret 2019; Lebacq 2015; Riera, Antier, and Baret 2020). Alongside this continuum of practices on a very small geographical territory, does it make sense to only consider how farmers may define themselves in opposition to others, instead of focusing also on what drives the definition of their practices?

The concept of identity brings an additional analytical layer to address this issue, by dissociating the individual from considerations related to his/her practices and by isolating his/her mental construct from that of the groups he/she might belong to. This concept is considered useful to approach the shifting dimension of the definition of oneself – the fact that the way a person defines herself, may evolve in changing circumstances (Burton and Wilson 2006). This is of particular significance in transition processes (Burton and Wilson 2006; Rizzo 2016; Ruoso 2020).

Identity is a concept emerging from the social identity approach in psychology (Fielding and Hornsey 2016). Identity can be defined as the “self-categorization of an individual’s role in society” (Bruno et al. 2020). Identities can be multiple, intersect social identities and be under the influence of power relationships (Bruno et al. 2020). The impact of social interactions on the construction of identity (Mead 1934) led to the consideration of identity as a conjunction of roles. Roles are “a positional designation within groups which carry expectations for behaviour” (Hoelter 1983). Identity is the combination of the meanings – or importance - that an individual attributes to each of these roles (Stryker et Burke 2000). There is a difference, on that account, between the identity salience and the identity importance (Hoelter 1983; Morris 2013) : identity importance is the ranking of roles that a person reports when asked about herself ; identity salience is the expression of roles in carrying out practices.

The identity importance impacts the farmers’ attitudes (their consideration whether an action is favourable or not) and behaviours (the effective actions – or identity salience) (Juntunen et al. 2019; Burton 2004b). Some studies on farming practices (Burton and Wilson 2006) and attitudes towards environmental measures (McGuire et al. 2015; Walder and Kantelhardt 2018) consider identity salience (the enactment of roles) as a direct proxy of the identity importance (the hierarchy of roles defining oneself). Other studies considered the effect of context on the roles expressed by farmers in their attitudes and practices (Stenholm and Hytti 2014). Several authors questioned, however, the direct translation of identity importance (the hierarchy of roles defining oneself) in identity salience (the enactment of roles in behaviour and practices). Burton (2004b) calls for an approach of behaviour considering identity importance as one factor among various socio-psychological factors influencing behaviour. For instance, the perception by the farmer of the

opinion of others may influence his/her behaviour and not necessarily match with her/his own identity importance (Burton 2004b).

Many researchers mobilized already the definition of self, or identity, to assess its importance as driver in decision-making about farm practices (Rizzo 2016; Burton and Wilson 2006; Wernersson 2018), or to participate in collective organisations (Minah and Malvido Pérez Carletti 2019; Bergman Lodin et al. 2019). The latter is notably more developed in research related to the global South, with a particular focus on gender issues (Burton 2004b). Other researchers considered the impact of practices linked to technological evolution on the identities of farmers (Klerkx, Jakku, and Labarthe 2019). Identity has also been successfully mobilized already to approach the diversity of profiles existing among farmers at regional level (Groth and Curtis 2017).

The identity-based approach allows refining the approach of the farmer as individual, in the sense that it takes into account that farmers may belong to a variety of groups, of different scales, that include also non-farmers (family for example), and hence hold multiple identities (Burton and Wilson 2006; Rizzo 2016; Groth and Curtis 2017). This is of particular relevance when considering the changes and adaptation of farmers' practices to a changing context (Rizzo 2016; Burton and Wilson 2006; Wernersson 2018) and the retroactive effects of these changes of practices on the farmer's identity (Wernersson 2018; De Herde, Maréchal, and Baret 2019).

Our aim is to contribute to the comprehension of the role played by identity as analytical concept, to understand how farmers define and relate to their practices. Considering the heterogeneity of practices present in the Walloon Region, our research specifically aims at understanding if this heterogeneity goes paired with variations in identities and whether the context in which farmers evolve influences their identity, the relationship between identity and practices and

consideration by the farmers of changes of pathways. We aim to consider how this notion of identity could refine and further develop Vanclay's (2006) approach to match the comprehension of dynamic of change, taking the dairy farmers of the Walloon dairy region as case study.

2.2. Materials

We based our qualitative investigation on semi-directed interviews with dairy farmers from two provinces where the dairy farming activities present contrasting features: the provinces of Liège and Hainaut, hosting respectively specialized dairy farms and diversified dairy farms. We considered a sample representative of the diversity of the farm models, and covering all outcomes in terms of supply chain (organic, non-organic, on-farm transformation, delivery to a dairy cooperative). Interviewees were male in 18 cases and female in five cases. They covered an age-range spanning from the early twenty years old to sixty years old, with more than 13 interviewees over fifty years old and 8 interviewees between 40 and 50 years old.

Based on the approaches of Burton (2004b; Burton and Wilson 2006) and Vanclay (2006) here above described, we focused the interviews on the following aspects :

- The definition the farmers give of themselves (identity – identity importance)
- The description of their practices (style as practice – identity salience)
- The definition the farmers give of ideal practices (style as ideal)
- The social context surrounding the farmer (interactions with farmers and others, role of the family) ;
- The identification of the constraints met in their plans and practices;
- Their considerations and judgments about other farmers.

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We thematically classified all interview-extracts on the base of these focusses. We further refer to the interviewees anonymously on the base of their practices, using the following codes.

Table 19 : Codes of classification of the interviewees

Set of practices	Organic dairy farming	Conventional (non-organic) dairy farming	Transforming and selling his/her own milk on farm	Non-dairy farming activities (diversification)	Active in non-farming complementary activities
Code	B	C	T	D	O

The first letter (L or H) refers to the province from which the farmers originate. As the farmers of the province of Hainaut all were involved in non-dairy farming activities, this was not used as a discriminatory factor to name them.

Table 20 : Profiles of the interviewees

Code	Sex	Age	Number of cows	Non-dairy farming activities	Other non-farming related activities
LC1	Male	40-50	180		
LC2	Male	20-30	180		
LC3	Male	50+	60-65		
LC4	Male and female	50+	180		
LC5O	male	50+	80		Pedagogical farm
LCT1	Male	40-50	80		
LCT2	Male	40-50	60		
LCTD3O	Male	50+	20	Poultry production	Owns several restaurants and golfs
LCD1	Female	50+	73-100	Mixed meat/dairy farm	

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LCD2O		40-50	100	Poultry production	
LB1O	male	40-50	60		Sale on farm of the product of his cooperatives – pedagogical farm
LB2	female	50+	80		
HC1	male	40-50	110	Mixed meat/dairy farm and crops	
HC2	female	50+	220	Mixed meat/dairy farm and crops	
HC3O	male	50+	75	Poultry production and crops	
HC4	Male	20-30	170	Mixed meat/dairy farm	
HC5	male	50+	160	Mixed meat/dairy farm	
HCT1	female	?	45-50	crops	
HCT2	male	40-50	55	Crops	
HCT3	male	50+	85	Crops	
HCT4	male	+50	70	Crops and potatoes	
HB1	male	40-50	60-75	Mixed meat/dairy farm and crops	
HBT1O	male	50+	20-25	Mixed meat/dairy farm, poultry and crops	Accommodation on farm
HBT2	male	50+	45	Mixed meat/dairy farm	

2.3. Results

The results first describe (point 2.3.1) how farmers define their identities, and in particular how the farmers link the various components of their identities. Point 0 then considers the link between identities, ideal practices (further defined as “ideals”) and effective practices (further defined as “practices”) expressed by the farmers. To assess this link, we first characterize the farmers’ ideals and practices (point 2.3.2.1). We then proceed by considering to which extent the farmers’ ideals match with their practices (point 2.3.2.2), and to which extent the expressed identities constitute an accurate indicator of ideals and practices (point 2.3.3.3). Point 2.3.3 completes the analysis by assessing to which extent the external factors influence the definition of the farmer’s identity, his/her ideals and practices and the relations between these three elements. Point 2.3.3 considers, in particular, the pathways of milk processing (point 2.3.3.1), the constraints perceived by the farmer, (2.3.3.2), the farmer’s family (2.3.3.3) and the effect of the contacts and judgements of other farmers (2.3.3.4).

2.3.1. Identity

Farmers were not interrogated on their identity as individuals, but in relation with their function of dairy farmer. The focus lies here on how they define themselves as dairy farmer (identity importance).

We identified the main following identities among the interviewees:

1. The animal (cow) breeder

The animal breeder entails a sensibility for the cows’ issues, allowing to follow up the herd adequately (HC1, HC2, HC3). Some interviewees directly link this role of cow breeder to the emotional attachment they have for their cows (HC4, HCT2, LC1, LC2, LC4, LCT1), or for a cow’s race in particular (HC5), as opposed sometimes to other animals (like pigs and poultry – HC4). Some interviewees stress that this emotional attachment to the cows is a factor bringing passion into the job (LC1,

HCT2, and LC2). Some consider that that emotional attachment to the cows is essential to become a good farmer (HCT4, LCT1). An interviewee even mentioned the relationship between the farmer and the animal as a form of symbiosis (HBT2), cows being at the origin of everything the farmer has. Another interviewee spoke of a duo (LB2).

The passion factor is stressed as well by the other interviewees (LC3, LC1, HCT2, LC2, LCD2). These interviewees link their passion to their emotional attachment to their cows (LC1, HCT2, LC2, LCD2), to the optimization of their genetics (LC3), to the successes they attain in terms of calves births and milk yield (LC5O) or to the fact that they were born as dairy farmers and would not want to do something else (LCT2; LCD1).

2. The milk producer

Some farmers identify themselves as the producer of a product, which is in essence a beautiful raw material holding a lot of potential for processing (HC4). Some farmers see the identity of milk producer as the resultant of/reward for the good care they give of their animals as breeder (HCT2, HCT4, HB1, and LCT1), by focusing on:

- the quality feed they are giving them (HB1, LC2);
- the adequate management of the rations (HCT2, HCT4) ;
- the genetics (LC2, LC3);
- the optimization of the farming activities (LC4);
- a rigorous approach of farming and animal care (LCT1).

Because of their good care of the cows, they manage to obtain a quality raw material (HB1, LB1O) or high milk yields (HCT2, HCT4, LC2, LC3, LC5O, LCT1). Some farmers use a similar metaphor of their cows being racing cars (HCT4, LC3). Other farmers specifically question the perspective of having “contest” animals. They put the well-being of the cows before their actual performances, even if their mission is to produce milk (LC4). Optimizing the productivity of cows does not necessarily means reaching the highest yields (LCD2). Others consider that a proper

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care of the cows and attention to their comfort and well-being in the stables will automatically translate into higher yields (LCT1).

Other farmers see their own identity in a reversed way: it is because they wanted to optimize the profitability of the farm and the milk yield of the cows (HC5) or the quality of the milk they produce (HB1) that they opted for a good care of the cows. These farmers see themselves mainly as milk producers who adopted good breeding practices (HB1).

For some farmers, the hierarchy is less clear: they consider good care of the cows as part of an economic calculation: cows won't produce well if they are not well treated. However, they also do it because they love their animals (LB2).

One farmer expressed his attachment to food production more than to that of milk production – saying he had been doing milk because of the fact that they had always done milk (LB10).

3. The recipient of a family tradition

Some interviewees refer, when speaking of their work of dairy farmer, to the pride of overtaking the function from their parents, as a sort of grounding factor of their identity (LC2). A farmer mentioned, about the on-farm sale practices that he inherited it in his blood (LCT1). Being born in the job explains why they love it and they would not want to do something else (LCT2, LCD1). For others (LB10) the family inheritance was a merely explicative factor of their current orientation of dairy farmer.

4. The business manager

Some farmers did not define themselves according to the relationship with the cows or their dairy production, but in relationship with the economic nature of their farming activity. They earn money through their activity by optimizing them, whatever this activity might be (LC1, HBT10). Let us note that other farmers also put the emphasis on the optimization of their activities on farm, but more in a perspective of a work-life balance (LC4).

5. The landscape/soil steward

Some farmers refer to themselves and other farmers as fulfilling a function related to the landscape or the soil. Farmers define this role more collectively than individually: they refer to the group of farmers they belong to, for example the organic farmers (HBT1O) or to farmers in general (LC4, LC5O).

2.3.2. Connexion between identities, ideals and practices

2.3.2.1. Farmers’ ideals and practices can be characterized, from resource-sparing and income stabilization to maximizing gross farm income

In order to assess the connection between the farmers’ identities, their ideals and their practices, we recorded the interviewees’ identities, the definition they gave of their ideals, and the description of their practices.

We identified in the description of the farmers features that spans from what we define as resilient to more performative ideals and practices.

We define as resilient farm ideals practices, the features of a farming system less intensive in terms of use of resources:

- Autonomy of inputs;
- Limited scale and production;
- Management of the farming system aiming at stabilizing income and guaranteeing work-life balance.

We define as performative farm ideals and practices, the features of aiming at maximizing gross farm income, by upscaling and high milk yields.

We illustrate in Figure 43 the distribution of the interviewees in relation to the main features characterizing both resilient and

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performative practices. Practices are recorded in green when related to the resilient set, and orange when related to the performative set. Ideals are recorded in yellow.

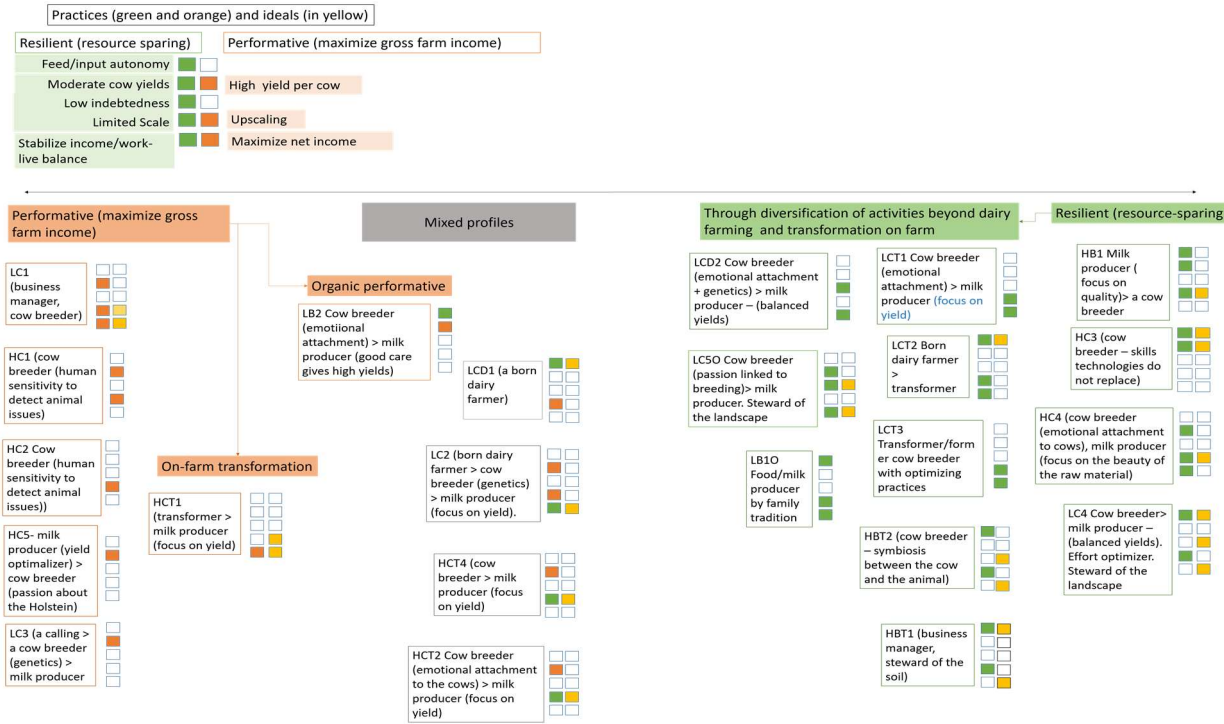


Figure 43: Graphical representation of the distribution of the interviewees in relation to the main features characterizing resilient (resource-sparing) and performative (maximizing gross farm income) farm practices

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Not all farmers defined ideals. Among those who did not (HC1, HC2, HC5, HCT3, LC3, LCT3, LCD2, LB1O, LB2) we find as well farmers having performative than resilient practices.

We notice that farmers mainly describe practices within the same performative or resilient approach that prevailed in the definition of their ideals. There are a few farmers, however, who do not define ideals and practices in the same resilient or performative approach (LCD1, LC2, HCT1, HCT2). This mainly concerns resilient ideals and practices adopted to spare costs (LCD1, LC2), maximize net income (HCT1), keep a work-life balance (HCT2, HCT4, LC2) or answer organic requirements (LB2) within a broader performative approach of farming (LCD1, HCT2, HCT4, HCT1, LB2, and LC2).

2.3.2.2. Ideals are mainly coherent with practices – but ideals alone do not explain practices entirely

Many farmers associate the description of their ideals with effective practices corresponding to these ideals (HC3, HC4, HCT1, HCT2, HCT4, HB1, HBT1O, LC4, LCT2, LCD1). Other farmers mention sets of practices that are different from their ideals. They also describe ideals apparently not converted into effective practices (HBT2, HBT1, LC4, LC5O). Given the fact that we performed qualitative interviews and no systematic screenings of their ideals versus their effective practices, it is difficult to infer from the latter whether these farmers did not effectively convert these ideals into practices. Let us notice, more generally, that the effective practices of some, though unexpressed as ideals, seem coherent in the light of their organic farming orientation (HBT2), transformation practices (HBT1), the focus on balanced yields expressed in their identity

of milk producer (LC4), or the expression of the will to remain one’s own master expressed in terms of identity (LC5O).

2.3.3.3. Identities are good but incomplete indicators of ideals and practices

Among the interviewees, identities seem to be good but incomplete indicators of the general types of ideals and practices that the farmer will favour.

This is the case when considering the different sets of identities and in particular the hierarchized identities. The more farmers detail their hierarchized/various identities, the more detailed they are in the description of themselves, the better the identity matches with ideals and practices. For example, HBT1 and LC1 both describe themselves as business managers having the optimization of their profitability of their farm at hand; yet, they both develop different ideals and practices (resilient for HBT1 and performative for LC1). HBT1 being organic, however, and defining himself as “steward of the soil”, gives an indicator that he might be more oriented towards resilience. Conversely, it would seem logical to infer from a farmer describing him/herself as a milk producer focused on yield (HC5), that that farmer would adopt performative ideals and practices. That, however, is not an absolute: HCT2 and HCT4 define ideals and practices that appear more resilient (in terms of scale and feed autonomy), that could not have been inferred from the way they had described themselves as milk producers focused on yield. We also have a farmer (LC2) presenting an identity focusing on the production of high yields as milk producer, but nevertheless mentioning elements of resilience in terms of ideal farm model (the importance of work-life balance). We, finally, have the case of the farmer LCT1, who relates to the fact that as dairy producer, he feels satisfaction when cows produce well, but who does not give any indications that he pursues this goal in his practices. Similarly, some elements of the identity of the

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farmer, like a farmer considering him/herself as a steward of the landscape (LC5, LC4), may indeed hint at the fact that the farmer will adopt practices away from the use of chemicals (LC4), for example. However, this is not a constant: LC5, as counter-example, also describes himself as a steward of the landscape and does not describe such practices.

When farmers describe their identity with only few details and no hierarchy, ideals and practices seem even more difficult to infer from the identities. The way the farmers describe their attachment to their animals (as part of their identity of cow breeder) alone does not indicate which type of practices they might favour. However, it seems worth to explore further the discursive aspects of these descriptions farmers do of themselves, in order to refine their indicative character. Two performative farmers (HC1, HC2), for example, describe their relationship with the animal in terms of skills (as does a resilient HC3 farmer, note), whereas one resilient farmer talks more in terms of the farm system being a symbiosis between the farmer and the animals (HBT2).

Beyond an incomplete and non-absolute guess about a general orientation that the interviewee might give to his/her ideals and practices, the identity of farmers says little about which kind of resilient or performative practices the interviewee considers. For example, focusing on milk quality (HC4, HB1, and LCT2), or on a balance between cow well-being and yields (LCD2), says little, in absolute, about:

- the possible aversion of the farmer for indebtedness
- his/her will to guarantee an adequate work-life balance;
- whether he/she considers that a limited farm scale allows the farm to produce that quality.

Also, some farmers seem to be able to adopt resilient practices, for example, a limited scale, because they get higher prices for their milk through the organic label (LB1). One transformer on-farm (LCT1) also

mentions the stabilization of income coming from transforming practices and presents the same profile of limited farm scale.

2.3.3. External factors defining identities, ideals and effective practices

Our experimental design aimed at letting us consider various influences on identities, ideals and practices. We will detail hereunder the observed effects of the pathways of milk processing, the constraints identified by the farmers, the family and the perceived judgements of other farmers.

2.3.3.1. Pathways of milk processing/choice of diversification as enablers of practices?

We already mentioned above, in points 2.3.2.2 and 2.3.3.3, the apparent coherence between the practices of farmers and the pathways of valorisation of their milk. For example, practices not expressed as ideals, like reduced use of chemicals or limited scale to produce quality, make sense given the fact that farmers are organic farmers and are realizing transformation on-farm (HBT2, HBT1).

Regarding the scale of the farm, we notice a correlation between pathways of transformation on-farm, organic practices and an average lower number of cows than the farmers without such practices. This is also the case for one farmer having diversified into other activities than farming (LC50). Some of these farmers expressed a reduced scale as an ideal (HCT2, HCT4). Only one farmer expresses explicitly the fact that the organic pathway acts as an enabler of the reduced scale, because of the higher prices received in this supply chain (LB10). Two other farmers describe transformation on-farm as a practice do stabilize income and expresses at the same time critical opinions about the process of upscaling in farm models, linked to the uncertainty and instability of income (LCT1, LCT3). We may hence consider that the transformation on-farm acts

there as an enabler of a practice that alleviates these risks. Regarding other practices than scale, one farmer describes diversification of activities towards non-farming activities as an enabler of a development model allowing keeping a low indebtedness (LCD2O).

2.3.3.2. Depending on how the farmer considers them, constraints influence ideals and practices

We list hereunder the main constraints identified by the interviewees:

1. Working conditions : the working hours and difficulty of the job (HC1, HC3, HC5, HCT1, LC2, LC3, LB2), without holiday (HCT4, HBT1O, LCT2) and affecting social life (LCD1) and a factor of uncertainty related to animals (HBT2), to the diversity of constraints you face (LC4, LCT1) ;
2. Institutional context : the amount of official (and often changing) rules (HC2, HCT2, LCT1, LCD2, LB2) and the administrative burden (HC4, HC5, HCT2, HB1, LCT1, LB1O) ;
3. Access to financial resources: The amount of money to overtake farms (HC4; LC2), the weight of investments (HC5) to make the farmer evolve (HCT2, LC50) and the level of indebtedness (HCT1, HB1) generating costs (LC1). Some speak about a vicious circle of indebtedness, particularly in times of crisis (LCT1, LCD2, HB1) ;
4. Access to land : land surfaces are very expensive (LC1) due to the pressure on land of foreign investors (LC50, LCT2, LB1O, HC5); Outcomes and remuneration: farmers struggle to earn a living (HCT1, HBT2, LCT1). The dependency on the choices made by the downward sector generate uncertainties in terms of income (HC4), prices paid are too low (HCT4), without guarantees on prices (HB1, HBT2) and hence on income (LCD1).

In front of the constraints, we notice five different attitudes of the farmers related to the effect of constraints on their practices, allowing divide the constraints in five categories:

1. The constraint exists, but doesn’t play a role for or against a given practice, it is an element of the landscape the farmer has to cope with ;
2. The constraint plays against the farmer’s will to implement a certain practice ;
3. The constraint determines the farmer to adopt a certain set of practices ;
4. The constraint is integrated as an inevitable element of the landscape and defines the farmer’s ideal ;
5. The farmer alleviates the constraints by defining ideals and practices that allows him/her to escape the identified constraint.

Typically, the constraints linked to working conditions and the institutional context (mentioned here-above) are widely cited among the interviewees. These constraints belongs for many of them to the category 1 (constraints you have to cope with). Some transformers on-farm, also see constraints linked to the management of workforce and the marketing issues of selling products as a given they have to cope with (category 1) (LCT1, LCT2, HCT4).

Three farmers cite access to land as belonging to the category 2 of constraint (playing against their will to implement a certain set of practices) (LCT2, HCT1, LC5O). In two cases, the constraint there seems to have played against an initial ideal of growing in size (LCT2, HCT1).

We notice a contrasted attitude related to the constraints linked to broader context of instability and uncertainty of prices and the vulnerabilities that the farmers identify in the performative farm model in this context (we illustrate the contrasts we observed there in Figure 44).

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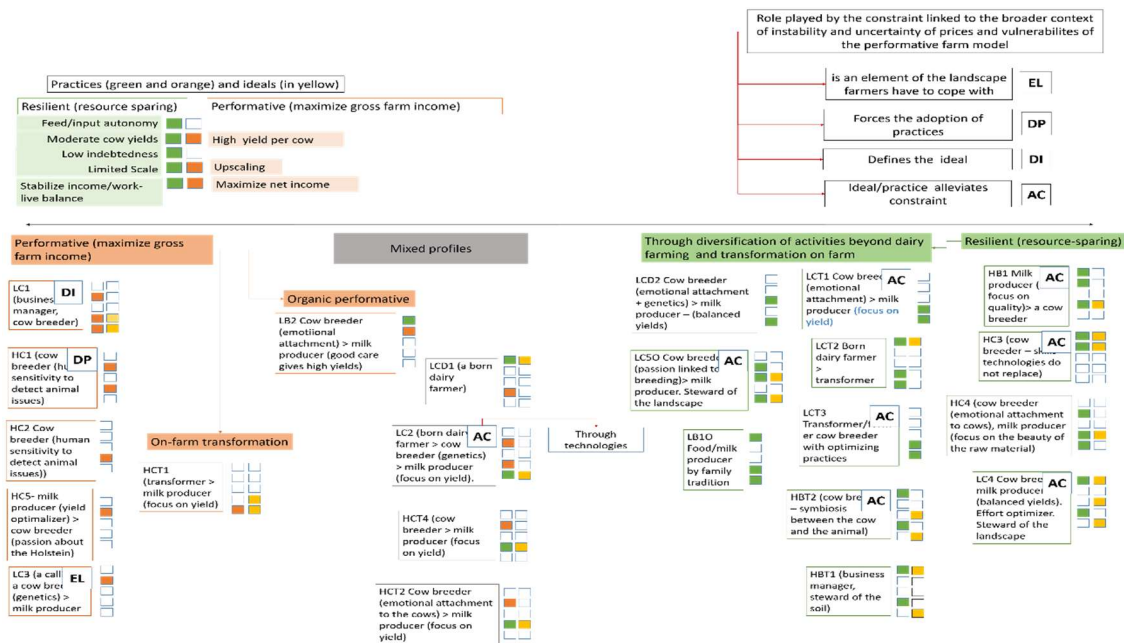


Figure 44 : Graphical representation of the distribution of the interviewees in relation to the main features characterizing resilient (resource-sparing) and performative (maximizing gross farm income) farm practices, with addition of their attitude related to the constraints linked to broader context of instability and uncertainty of prices and the vulnerabilities

For at least one farmer (HC1), growing in size to ensure a sufficient remuneration appears as determining his practices (category 3 – tag FP in figure 2). Another farmer had another approach in front of that constraint (LC1): given the lack of power of farmers over their remuneration, growing in size appears there as an evidence. This farmer (LC1) integrated that constraint within his performative ideal (category 4 – tag DI in figure 2). Another farmer simply considers the issue of uncertain and unstable remuneration as an element of the present landscape the farmer has to cope with (including through relying on the fixed salary of the spouse working outside of the farm) (category 1 – tag EL in figure 2).

Many farmers with resilient practices approach this context by adopting a category 5 strategy described above (tag AC in figure 2): they define ideals/practices to avoid the constraints that they associate with a performative farm model in the broader context of instability and uncertainty of prices that leads farmer to adopt performative practices (Table 21).

Table 21: Definition of ideals/practices alleviating the constraints associated with the performative farm model in a context of price uncertainty and instability.

Ideal	Constraint present in the performative farm models
Cows pasturing	Upscaled farms do not let cows pasture anymore (HC4)
Cows well-being	Growing in size is a never-ending chain that has effects on cows well-being (HCT2) ; you can't take care of the cows properly (HB1)
Feed autonomy	Raising the number of cows endangers feed autonomy (HCT4)
Work-life balance	You don't have the time to do your job properly, it's more about maximizing what you earn (HBT1, HBT2, LC5O) ; one should never work more than what's reasonable (LC4)
Indebtedness	In a system in which you invest a lot, you depend upon banks and you crash more easily in situations where the prices decrease (HBT2, LC5O)/)/ Once investments are done, you have no other options than to keep raising the number of cows and maximize the yield to keep up generating enough to cover the loans, and that can lead to more loans, in a never-ending circle (HB1; LCT1, LCD2, LC4)

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Let us note (see Figure 44 – tag AC) that we also find this pattern of an ideal to alleviate constraints (fifth category) in a more performative profile of the LC2 farmer. This farmer specifically integrates the benefit of automated technologies in milk equipment to secure his work-life balance and keep orienting his practices towards upscaling.

2.3.3.3. Family defines identity and acts as enabler or disabler of practices

Family plays various roles in the farming model:

1. decision making (HC1, HC2, HC4, HCT1, HBT1O, LC1, LCD1);
2. workforce and task sharing (LC1, LC2, LC3, LC4, LC5O, LCT1, LCT2, LCT3, LCD1, LB2, HC4, HCT4, HC5);
3. provider of funds for investment (HBT1O, LCT3) or funds in cases of difficulties (LCD2)
4. psychological support (HCT1, HCT2, HBT2, LC1).

The interviewees describe family as a powerful enabler or disabler of the conversion of ideals into practices. Some farmers mention tensions between generations (HC5, LC5O, LCD2) or on objectives (LC1, LC4, LCD2), needs to compose with the sensitivities of the older generation/the other family members when considering changes of practices (LC1), can diminish the freedom in terms of ways of working (LC5O).

As noticed when describing the interviewees' identities (point 2.3.1), family also plays a role in the definition of the farmer's identity. This is visible when the farmers refer to their familial heritage when describing themselves. This may also be the case for farmers who do not mention it.

2.3.3.4. Judgements mainly focus on the practices of other farmers – similar practices favour exchanges among farmers

Farmers seem to issue judgments towards practices that do not match their ideals or their effective practices. This judgement is directed at the perceived lack of sense of practices rather than at the farmer him/herself. In many cases, this judgement is not exempt of comprehension as to what might drive farmers in certain directions: for example, farmers who face important levels of indebtedness don’t have much other choices than to be performative, keep growing in size and maximize yields (LCT3, HB1, LCD1, LB1, HCT2). Farmers also expressed a judgement on the person of the farmers: farmers are individually-minded (HC3, HCT2, LCT2), act as competitors on number of cows (LC1, HBT2), are after money (HC4), go for big machinery (HC5), and are not careful enough in their investments (LCT1, LC1, LDD2O, LC5O, HC5, HC3). Some interviewees qualified other farmers of subsidies-seekers, talking about organic farmers (LCD2O) or those they considered as bad farmers in general (LC1).

2.4. Discussion

Within a proposed classification alongside an axis going from performative to resilient practices (results point 2.3.2.1), the practices of the interviewees present an important diversity (visible in Figure 43). The identification of two sets of attitudes in front of the constraints of generating income (detailed in the results point 2.3.3.2), nevertheless hints at the existence of two distinct sets of strategies, that Vanclay (2006) defines as the options, the “set of practical guidelines and/or rationales” to deal with a particular situation, at the crossover of knowledge, experience and social judgement. As detailed in point 2.3.3.2, in front of the constraint of instability and uncertainty of income, some farmers adopt performative practices and other farmers adopt practices aiming at alleviating the constraint and what they identify as the adverse effects of

the performative practices adopted by other farmers. Our experimental design, however, doesn't allow to understand clearly to which extent these strategies develop as shared narratives among farmers (see Burton (2004a)'s methodological account of a second set of interviews to tackle this aspect specifically), and which channels of knowledge exchange, interactions or personal context favour the adoption by the farmers of one strategy over the other.

As detailed in our results (point 2.3.3.3), identities are imperfect proxies to approach which strategies the farmer might develop as ideals and further implement as practices. The more farmers detail their identities, and in particular the hierarchy of their identities, the better, however, identity can account for the strategic orientation of the farmer. The added value of letting the farmers describe their identities themselves, without considering pre-established categories (Burton and Wilson 2006), is that it brought meaningful indicators related to how dairy farmers, in the Walloon Region, relate to their function of dairy farmer. In particular, this relation to the function of dairy farmer can act as explanatory factor as to how farmers may perceive their role and responsibilities as dairy farmers (Burton 2004b).

It's not surprising that some farmers did not define ideals (results point 2.3.2.1). "Farmers, perhaps with the exception of organic farmers and grazing emphasis, do not conceive of their notion of good farm management in the form of a specific style that can be easily communicated through a meaningful label" (Vanclay et al. 2006). Identities may hence constitute useful complementary proxy-indicators of the way the farmer approach her/his practices. Identities are meaningful when the individual can define him/herself in these terms, and when other farmers can relate (link themselves) to the individuals using the same criteria (Burton and Wilson 2006). The fact that some identities appear across the spectrum of the interviewees, like that of cow

breeder, or of steward of the soil, suggests that this is the case regarding the identities described here.

Some farmers with an identity that we may qualify of more “performative” nevertheless developed resilient ideals and practices, in one case because personal and external constraints hampered to follow a performative pathway (see results point 2.3.3.2). Changes of practices indeed may ultimately lead to the shifts in identities (Smith et al. 2007; Wernersson 2018; De Herde, Maréchal, and Baret 2019) or the sense given to one’s own activities (Rauschmayer, Bauler, and Schöpke 2015). This calls for longitudinal analysis/following of farmers who present mixed profiles of ideals, practices that do not entirely match with their identities, as to evaluate to which extent we observe a dialectic process of change of the definition of self over time. Globally, identities appear as useful indicators hinting at the way the farmer considers his/her role in the landscape. In particular, identities approached from a perspective of discourse analysis can leverage good insights as how the farmer approaches his/her role of dairy farmer (as exposed in the results, points 2.3.1 and 2.3.3.3, how the farmer describes cows, how the farmer relates to his/her skills, for example).

We found, in the diverse identities, many aspects that are common to farmers, regardless of their differences in strategies and actual practices. These common identities go paired in our results (point 2.3.3.4) with the apparent tendency to understand the reasons why other farmers may go along a certain pathway of practices. Farmers also express limited judgemental parables (defined by Vanclay (2006) as collectively constructed judgements about other farmers, defining the boundaries of the group). This limited expression of parables may be linked to the intrinsic bias of a single interview by a stranger, to which the farmer will not likely speak with an open heart about harsh judgements against others. Nevertheless, these elements combined suggest that the heterogeneous landscape of the Walloon Region gives openness to a variety of references in terms of practices for dairy farmers. A

comparative study with more homogeneous regions, in terms of strength of parables and alignment between identities and practices would bring interesting insights as to whether the strength of belonging to a group does not appear more frankly as driver of behaviour and reflects itself in strong parables disqualifying other farming styles, in more homogeneous landscapes. In the case of the Walloon Region, the approach of the identities of the farmers not only reveals the variety of identities present in the landscape, but also the intrinsic diversity of pathways farmers may engage into from a similar identity. Farmers may be less under the influence of the dialectics of a homogeneous group, and present similarities of fundamental approaches in how they define themselves, without that being the result of a process defined by the group. This individually-based approach, through identity, hence offers a refinement of the understanding of farmers going beyond their identity salience (their expressed practices). This could be of particular significance in heterogeneous farm model landscapes, in terms of dialogue between farmers across distinctive farm models – on which their judgements focus - and, as exposed above, as a methodological tool to follow-up shifts, at individual level, in transition processes.

What our results, in particular, highlighted, is that what drives farmers towards distinctive ideals and practices lies in the way they interpret the constraints they all face in terms of generation of income on the farm. The effects of the personal context (human workforce) or access to land plays as a constraint likely to limit the possibility of some farmers to follow a pathway, towards upscaling, or towards on-farm transformation. The presence of these constraints is dependent upon the particular situation of every farmer and can influence their effective practices regarding an ideal or a former ideal of farm development. We find here a pattern that is illustrative of the concept of negotiation described by Vanclay (2006). We also notice, however, the effect, on the definition of practices, of the interpretation the farmer makes of the more

general constraint linked to remuneration and uncertainty of milk prices. Constraints act not only at the level of negotiation between ideals and practices, they also lead the farmer to adopt a strategy in which the ideals and practices are defined in order to avoid the constraints identified with the performative answer to the issue of generation of income. This indicates, at least in the dairy landscape that we studied, that the definition of a strategy is a historical shared construct grounded in traditions (Vanclay et al. 2006), but also depends from how every individual farmer reacts to the challenges faced. There is a link there to be explored in relation with the broader personal identity of each farmer, and his/her culture related to work, risk, and values.

These observations lead us to propose an adaptation (illustrated in Figure 45) of Vanclay’s framework to account for the individual mechanisms identified here and influencing decision-making. In Vanclay’s framework (represented in blue in Figure 45), farmers define ideals on the base of collectively shared strategies (considerations on how to react in a given situation) and parables (judgements disqualifying certain sets of practices). The farmer individually defines an ideal on that base, that, upon confrontation with to external factors (social pressure of peers, market forces, climate factors) and internal factors (state of the farm, family’s influence and personal situation of the farmer) defines the effective practices.

We propose a refinement of the analysis of the dynamic of decision-making at the individual level (illustrated in Figure 45, in black, orange and deep red). This decision-making process may still be under the influence the group(s) the farmers belong to. Nevertheless, this decision-making process includes a complexity at individual level that unfolds regardless of the group dynamic. Farmers develops a personal strategy that may be under the influence of shared strategies, but also of their personal identity and culture related to work, risk, and values. Their identity as dairy farmer contributes to define a particular farm ideal. The

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process of negotiation (confrontation between the farmer and his/her environment) not only (a) determines which effective practices the farmer will be able to put in place (corresponding to the category 3 of answer to the constraints – detailed in the results point 2.3.3.2). This process of negotiation also includes an analytical dimension on the constraints faced, and an effect of (b) adaptation of the ideal (that we described in the results point 3.3.2 as the category 4 answer to the constraint: the integration of the constraints in the definition of an ideal taking these constraints into account). In particular the judgement on the effects of the constraints on other farmers may act as feedback on his/her general strategy of development to (c) alleviate the effects of the constraints identified (in results point 3.3.2, we identified this feedback effect as the category 5 answer to the constraints : define a strategy alleviating these constraints). Similarly, the family or the pathway of milk processing in which the farmer evolves may (a) determine (disable or enable) the specific farm model the farmer develops, as well as (b) be integrated as a part of the farmer’s identity (and hence influence the farmer’s ideal at a more fundamental level).

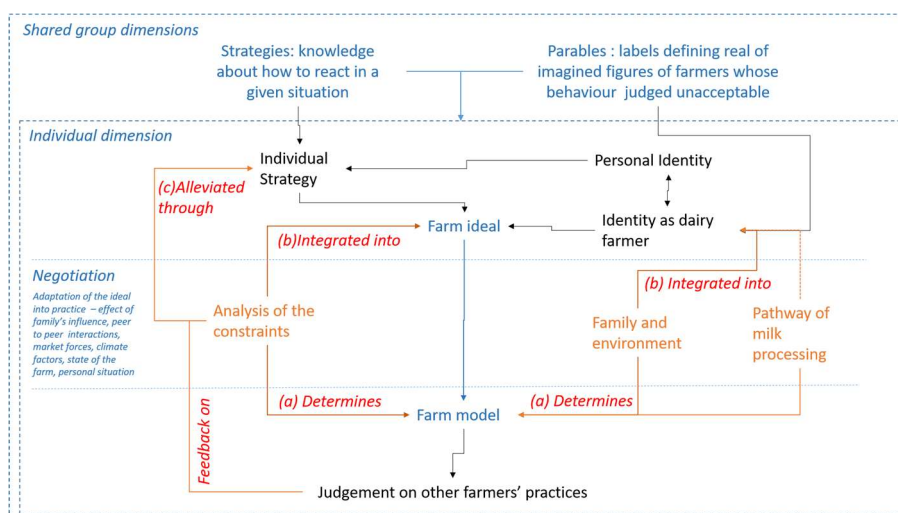


Figure 45 : Presentation of Vanclay's (2006) framework (in blue) and proposition of refinement (in black, orange and deep red) of the decision-making process at individual level.

The added value of considering the complexity of the decision-making process at the individual level, is that it can account for the dialectic dimension of decision-making, with feedback effects from observation, experience and context on the way the farmer considers him/herself and on the decisions she/he makes in terms of practices implementation. In particular, in a heterogeneous landscape as the one we studied, where group boundaries are unclear, and when farmers are shifting strategies in transition pathways, such an approach offers more grip on “the ‘micro-structural’ or grassroots agency level” (Burton and Wilson 2006). Our study, in this regard, hints at the added value to pursue along this line of studies related to individual decision-making. Not only does this approach allow to refine the approach of decision-making process at individual level, it may also refine the comprehension of where the boundaries between groups of farmers lie, and reveal what farmers may share in common or differ upon, at the level of their identity for example, beyond an apparent diversity or similarity of practices. In heterogeneous landscape or landscapes shifting towards an increasing heterogeneity of practices, this approach hence offers a further grip into the comprehension of the farming landscape, how to refine the comprehension of the boundaries between farming styles in such a landscape, and how to monitor their possible evolution over time.

2.5. Conclusion

This study considered a crossover between the farming styles approach and the social-psychology approaches of identity, as a way to account for the approach of farming practices in a heterogeneous and changing landscape. The conceptual ground of the farming styles concepts is the fact that farmers belong to groups sharing strategies and a set of judgements on other farmers that clarify the boundaries of the group. In a heterogeneous landscape like the one we studied, there is room to consider the decision-making process as also driven by a dialectic

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process involving the way the farmer defines him/herself and how she/he relates to the context in which she/he evolves. In terms of future perspectives, this research stresses the relevance of considering the mechanisms of individual constructs, away from collective definitions, and to consider the effect of the group from an individual perspective, that is how the farmer relates to the group. Shifting from a farm model to another is an individual dimension. The crossover we realized on the consideration of identity and the combination of farming styles studies with ulterior longitudinal surveys on individual dimensions of decision-making processes may bring a meaningful added value in the landscape of research on transition dynamics at the individual level.

3. Additional data related to the study on farmers' identity and relationship between identity and practice – consideration of collective action by the interviewees.

These data are part of the material gathered by the master students Claire Pirlot and Mathieu Weinreb-Villard. They concern specifically how the interviewed farmers relate to collective action and to other stakeholders of the dairy value chain and the wider society. These considerations are of significance for the following general discussion on the challenges of collective action in diversification pathways.

3.1. A context of competition in a fragmented landscape

The consideration of collective action by the interviewees grounds itself in a particular landscape of contacts among farmers, marked by a context of competition and the description of a fragmented landscape in terms of farm models and needs.

Competition mainly coalesces on the issue of competition for land extensively cited by the interviewees (HC4, HC5, HBT2, LC1, LC5O, LCT3, LB1O). One interviewee notes that the rivalry, previously, concerned the milk quota (LCT1). Other farmers describe a more general issue of jealousy/competition among farmers (HCT1, HB1, LC1, LCD1, LC3) that applies for example to the cows' performances (LC3). Rivalry diminishes when the number of farmers decreases in the surroundings (HB1, LCT3, LB1O), or when farmers seek contacts with farmers not close to them geographically (LC1). In one case, the anger in terms of access to land was expressed specifically at the farmer that had a different farm model (LC2 regarding the organic neighbour).

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The decrease of the number of farmers, though mitigating the effects of competition, also diminishes the opportunities of contact among farmers (LCT3, LB10). Other factors hampering contacts are linked to the size of the farms (so big you barely know/see your neighbours (LCT3)) and the amount of work on farm (HCT4, HBT10, HBT2, LB10). Also, different farm models exist and induce different needs, for example in terms of machinery. This does not favour exchange between farmers with different farm models (HCT2, LCT2).

According to one interviewee, the organic sphere seems more open to exchanges in contrast with the conventional sphere (HBT2). Some farmers express also a satisfaction to exchange with a certain group of farmers. For example, one farmer transforming on farm (LCT1) says that he found a more positive spirit with contacts with other transformers on farm, while farmers in general tend to portray things in a negative fashion, focus on problems.

Many interviewees report a lack of culture of mutual help (HCT3) and of cooperation, in contrast with the situation in France (HC4, HC4, HCT1, LCT2, LCD1).

The main opportunities of contact are identified as follows:

- through the cooperative (HC1, HC4, LCT2) ;
- through local groups discussing accounting and practices (CETAs) (HC2, LC1, LC2, LC50), sometimes leading to mutual help or joint contracts for supplies (LC2);
- through the participation in farmers 'union activities (LB2);
- friendships (LCT2, LCD1).

3.2. A sense of isolation from the other actors in society

Some interviewees cast a judgement on media, consumers and stakeholders that translates into a form of estrangement and feeling to not be understood alike. For instance, the consumers’ and the media’s critics, tend to overlook the constraints linked to agri-food production and the fact that some solutions implemented by the farmers are the best possible solution (HCT3, HCT4, HCT2). Two farmers express a feeling of injustice to be designated as bad (HCT3, HCT4). Medias tend to follow trends about what’s “good” or “bad” but fail to inform the consumer (HC1), adopt a negative tone (HC4, HCT2, HCT3, HB1), without stressing what farmers have improved their practices (HCT2, HCT3).

Policy-makers are mainly described as non-supportive, in the sense that they fail to protect the farmers from what the interviewees identify as the unfair competition with extra-European imported products. Some interviewees denounce the existence of a double standard of requirements applying differently to imported and non-imported productions (HC4, HCT1, HCT3, HCT4) and the dangers of multilateral treaties (HB1). The fact that farmers are put in competition with each other (LC50), and under the courses of the world prices (HBT2) is stressed as a form of absurdity regarding dairy products (LC50, HBT2). Some interviewees question whether the farmers are among the priorities of the policy-makers at European level (LB2), or whether there is a will to keep farmers at all (LCD20). At regional level, positive evolutions, for example the services to help farmers develop a milk processing activity, or the support to young farmers, are noted by some farmers (HBT2, LCT1). However other farmers express the same feeling as towards the European policy-makers: that regional policy-makers do not defend the quality of the products produced locally (HC1), and that the reason why they aren’t is because the farmers do not weigh enough anymore as part of the

population (HB1). Some interviewees also consider that the policy-makers fail at addressing issues properly: they prefer to accuse the cows of being responsible for climate change than addressing other habits of the population (LCT1). They rejoice on the high land prices considering it is a sign the sector is going well, whereas it is just speculation (LCD1). Alongside policy-makers, unions fail to define strategies, for one interviewee (LC50).

Not many farmers mentioned the dairy cooperative, but those who did, were aligned on the fact that they did not differentiate one dairy cooperative from another (LCT3). Farmers do not have much to say and are not informed about the outcome of their milk (LCT1, LCD1). How the dairy cooperative pay the farmer is described as arbitrary (HC1, LDC20). However, one interviewee stressed that dairy cooperatives do not have many other options than to define strategies to be more powerful in front of mass retail (LC2). Mass retail does not support dairy farmers and use milk as appeal product for the consumer (HC1).

Some interviewees are defiant in front of the stakeholders with whom the farmers might interact: brandholders (HCT4), industrial milk processors (HC4), sellers of feed complements (HBT2), banks (HC1, HC5, LC50, LCT1, LCD1). The idea generally expressed is that the other stakeholders will use farmers for their own benefit.

3.3. Agency mainly approached as an individual enterprise of awareness-raising

Considering the challenges they face, including the issue of bad image that society allegedly mirrors back to them, the interviewees, when interrogated on how they see the future and about their projects stress individual and collective action. Both modes of action are mainly based on communication and awareness raising.

The interviewees putting the emphasis on individual action are the ones who already are in regular contact with the citizens, through their on-farm processing activities or other activities on-farm (like a pedagogical farm). They stress the positive role of communicating towards the consumer to which they sell products ((HCT1, HCT2, LCT1, LCT2, LCT3, LB1O) or services (LC5O, LCD1).

For farmers who do not process milk on-farm or do not develop another activity involving contacts with citizens and consumers, action is also about developing an entrepreneur mind-set (LC1), and also show to the consumers that the cows pasture (LC2, LC3). Other farmers adopt a more fatalistic attitude, that there is not much to do against the current trend of evolution, be it the world courses (HC4) or the fact that milk is the raw material for the “industry” (LC4).

In terms of collective action, novel ways to raise awareness, through consumption milk brands like “*Fairebel*” or “*C’est qui le Patron*” (a private brandholder cooperating with the dairy cooperative *Coferme*) are cited (LC2, HC3, HC4, HCT4). Demonstrations are also mentioned (HC4), although some interviewees again express a rather fatalistic stance that farmers are more easily mobilized when the milk prices are low (HC5), but that collective action fails (HCT2) or only brings limited results (HCT3).

Beyond awareness raising, other collective projects are not mentioned, except by one interviewee who considers that farmers should take the initiative to promote pasture-milk (HC3) and demand more tracing on the modes of production on farm.

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Chapter 6 – General Discussion - Unlocking
collective agency for transition as a multi-scale
dialectic process

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1. Introduction

This study on the drivers of pathways of change in the Walloon dairy sector towards product diversification consisted of a two-dimensional focus. A first focus lied on the challenges faced by dairy cooperatives, considered as structure of collective agency. A second focus related to the farmer as individual agent, as to understand how to approach the embeddedness of his/her individual agency in the wider sectoral context and the interplay of his/her individual agency with collective agency.

Our approach was based on a micro-level and micro-scale consideration of the challenges faced by individuals and organizations (dairy cooperatives), by examining the elements that enable or disable their agency: contextualize and understand these elements, uncover the complexity of the feedback effects generated by these elements in a given context, and their impact on macro-scale pathways of development.

We specifically uncovered:

1. that cooperation between dairy cooperatives, as structures of collective agency, could be structurally hampered in a context of competition, because of the intrinsic tension linked to the dual role of the farmer as milk supplier and as principal investor, and its effects on governance practices (chapter 2);
2. that governance models, and specifically different modes of vertical coordination and horizontal coordination in the value chain, addressed this intrinsic tension differently, while at the same time offering distinct strategic advantages in a given context (chapter 3);
3. that a diversity of governance models, and specifically different modes of vertical and horizontal coordination in the value chain, had the potential to support a diversification of milk processing

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- pathways, in particular in terms of definition of milk quality and relation with the farming system (chapter 4);
4. that farmers as milk producers evolve within a contextualized supply chain organization, that influences their farming practices and the way they define their role as milk producer; (chapter 5)
 5. that the consideration of the farmers' identity and the way they approach the constraints they face, refines the understanding of how farmers relate to and define their practices in an heterogeneous context (chapter 5);
 6. that the Walloon dairy farmers evolve in a context of mutual competition and feeling of estrangement from other actors in society, and mainly define collective action as awareness-raising initiatives of other stakeholders on the need to support them as food suppliers (chapter 5).

This research uncovered a series of dialectic mechanisms linking the collective agency of farmers in dairy cooperatives with the individual agency of the farmers. The interplay between both agencies is essentially mediated at the level of the governance of the dairy cooperatives. This interplay generates:

- Possible lock-ins to cooperation between these structures (chapter 2);
- Possible lock-ins to the exploration of a set of market outcomes for dairy products rooted in a more diversified definition of milk quality – and related farm practices – than the standard definition of milk as industrial raw material (chapter 4 and chapter 5).

Cooperation, or adverse attitude to cooperation, appears as the result of a dialectic and contextualized process that connects different scales, the individual scale, the collective scale, and the inter-collective scale. “Contextualized” is here understood in the sense that factors of conjuncture (for example, on the market of milk as raw material),

structural features of production (such as the production density or degree of intensity of dairy production in a territory), or a given cultural and institutional environment (such as the presence or absence of coordination and support structures in the landscape), may aggravate or conversely mitigate a situation of adverse attitude to cooperation. An adverse attitude to cooperation may express itself at the level of the farmers and/or at the level of the cooperative management. Both are dialectally linked by contextualized feedback loops acting on the commitment of the farmers to the cooperative, and on the commitment of cooperation among cooperatives. This process answers to the very definition of a complex process, where “outcomes are determined not by single causes but by multiple causes, and these causes may, and usually do, interact in a non-additive fashion” (Byrne 1998). This inference could incorrectly lead to the assumption that no lesson can be drawn from such an analysis. We posit that, quite on the contrary, the demonstration of the complexity of a process such as the one uncovered here, offers a pathway into theoretical and practical considerations as how to approach and accompany such a process in pathways of transition. This general discussion aims at clarifying the main findings and added value of our research in terms of study and support of transition pathways. Point 2 focusses on the main theoretical and epistemological outcomes, point 3 on the avenues for future research, and point 4 on insights related to action and policy-making.

2. Main theoretical and epistemological outcomes

Our epistemological approach focused on a micro-level approach of the dairy food value chain, by centering on the trajectories of dairy cooperatives and on farmers’ trajectories. The Multi-Level Perspective was combined, to this end, with theoretical frames adapted to grasp the reality of day-to-day interaction processes defining stability and change at that micro-level. This combination proved successful to draw meaningful

insights on macro-scale trajectories of change. The analytical concepts of “niche” and “regime” in particular in chapter 4 and 5, meaningfully contributed to these insights. When used as analytical tools to study the coherence of different development model, they uncover lock-in dynamics impeding certain trajectories.

This section considers successively the refinement brought by this research in terms of approach of lock-ins (point 2.1), how governance acts as a cornerstone issue to overcome these lock-ins in collective action (point 2.2), which lessons draw from these findings in terms of approach of value chain development (point 2.3), and the contribution of a qualitative grounded theory approach to these findings (point 2.4).

2.1. Lock-ins as a dialectic mechanism connecting micro-scale individual and collective agency to context

The lock-ins are one of the most pervasive theoretical concepts mobilized throughout this research. This investigation built on significant previous research outcomes on lock-ins to transition pathways in the agri-food or other sectors. These had already identified and categorized lock-ins, and stressed how a combination of lock-ins acted on various dimensions of socio-technical systems to “lock-in” actors within certain practice routines and supporting institutions. What our research uncovered, in particular (chapter 2, chapter 4 and chapter 5 part 1), is how lock-ins dialectically interact at various levels and may reinforce themselves in a given context. This research invites hence to consider lock-ins as components of a dialectic mechanism of constant interaction between the individual, the collective scale and its related structures, and the broader context in which both individual and collective scale are embedded. Lock-ins are lock-ins, only because they act in conjunction and within a given context. They might not have the same lock-in effect isolated or in another institutional or contextual configuration. Similarly

to other researchers working on transitions in the dairy sector (Vermunt et al. 2020), this research hence stresses the importance of considering transition in relation with the local anchoring of actors and issues.

2.2. Governance as cornerstone-issue to overcome lock-ins in collective pathways of change

The issue of the interplay between individual and collective action is not new, and has been studied before regarding agri-food value chains. Many approaches tackled this issue in terms of resources, including through a non-universally defined concept of social capital (chapter 2, part 2). Our approach consciously focused on enablers and disablers of collective action, including in their contextualized combination and complex feedback effects. This approach ties with a systemic consideration of sustainability issues, that interrogates a system's functions as emerging from a complex network of mutual influences (P. B. Thompson 2007) and, beyond resource-use optimization, also considers which proactive construction of the future the system may entail : "what could we do" (Bawden 2012; Soosay and Hyland 2015; P. B. Thompson 2007). This analytical approach uncovered governance-issues as a cornerstone enabler or disabler of future trajectories, and a central issue to overcome lock-ins in collective pathways of change.

Governance processes, as detailed in chapter 3, are the contract-derived patterns of working of an organisation, and include the mechanisms employed to organize the interactions among partners leading to exchanges and allocation of resources. The main lock-ins identified in this research relate to changes of pathways towards a more diversified pattern of products than the low added-value productions of consumption milk, milk powder and butter. The historical investigation (chapter 2) revealed lock-ins to cooperation between dairy cooperatives along that change of pathway. These lock-ins stem from the impact of the

intrinsic dual role of the farmer and the tensions between the interests of the farmers as milk supplier and as principal investor on the governance of the dairy cooperative. This tension, especially in contexts of competition among dairy cooperatives, generates feedback effects adverse to cooperation among dairy cooperatives, and to the commitment of the farmers to the long-term goals of the cooperative model. Chapter 4 revealed that lock-ins to diversification today also stem from the vertically integrated governance form, namely the scale and the path dependency of industrial investment pathways based on a statutory equal remuneration of milk and strategically aligned large-scale milk producers. Chapter 4 demonstrates that innovative governance models based on other vertical and horizontal coordination patterns than the vertically integrated model, offer a structural answer to these lock-ins. Chapter 3 frames these governance models in terms of intrinsic strategic added value.

It is interesting to notice that no coordination model alleviates the complexity of the management linked to the fact that the farmer holds a double status of milk supplier on one hand, and cooperative member, on the other hand. The farmer's commitment to the cooperative long-term development hence remains the key to a successful interplay between the individual agency of the farmer and the collective agency project. γνῶθι σεαυτόν (gnôthi seautón) is widely known as a fundamental expression of wisdom, that ties with the deep philosophy of rational introspective analysis as key for grounding attitude and action in meaningful insights. This maxim, beyond individuals, also apply to the organisations that stem from collective agency, and in particular, to the coordination models whose features we studied in chapter 3. Knowing what an organization can or can't do and under which circumstances, knowing this organisation's interplay with the individual of the farmers, and how to counter possible the possible vulnerabilities and adverse feedback effects, might be the key consider its relevance for future trajectories. This approach grounds a way to consider the sustainability of a systemic

construct, like an organisation, under the angle of its effects on every of its interconnected subsystems (P. B. Thompson 2007), hence allowing agents to consciously agree on which ‘add-on’ values they ground their trajectory, among a diversity of otherwise equally worthwhile options (P. B. Thompson 2007).

2.3. For a recontextualized approach of value chain development

Recent literature (van Bers et al. 2019) advocates for the consideration of the governance of food systems in a more globalized fashion, that is by encompassing “all processes and actor constellations that shape decision-making and activities related to production, distribution and consumption of food”. Our research indeed uncovers that dairy cooperatives, as actors in the value chain, influences more than its own processes of development. Because of its central role in the dairy value chain and operator of milk collection, it also influences the way actors may want to develop at the margin of its own activities (see, in particular, chapter 4 and chapter 5, part 1, in this regard). This indeed calls for the consideration of value chains from a systemic perspective, including thus by considering the governance of interactions between its components (which we will consider in terms of policy-making in section 4 of this general discussion).

This research, however, also stresses that governance is an issue starting as soon as farmers gather, among farmers or in collaboration with other stakeholders, in a value chain enterprise, and that key processes emerging from this micro-scale level impact macro-scale value chain trajectories. The key to approach value chain development in transition pathways hence lies in the understanding that contextualized feedback loops exist and connect different scales, from the individual definition of one’s role to the way a collective organization like a cooperative is steered.

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This approach logically requires a qualitative engagement with stakeholders co-creating research material “as to provide an opportunity to analyze supply [value] chain phenomena in the context within which they are constructed” (Touboulic, McCarthy, and Matthews 2020).

Let us stress the added value of this chosen qualitative approach to answer theoretical questions on value chain organisations and draw new avenues of research. Ménard (2017) identifies “fundamental puzzles” linked to hybrid organizations, from the perspective of organizational theory. Chapter 4 studied several new cooperative models answering to the classic definition of hybrids in organizational theory. They indeed are organisational forms situated between spot market relationships and the classic coordination of relations by internalization within a structure and submission to an authority. So were also the intercooperative models present in the historical trajectories of the Walloon dairy cooperatives, studied in chapter 2. The first puzzle identified by Ménard (2017) concerns the very existence of hybrids, as intermediary form between market transactions and integration. The second puzzle concerns the stability of a model with potentially high governance (coordination) costs. The third puzzle is the plurality of possible combinations, and which justifications exist for that plurality to exist at all (Ménard 2017).

Our research uncovers that the existence of hybrids and the sheer variety of the possible models makes sense when considered at the trajectories that they enable or disable. Our research goes over a mechanistic and deterministic approach of firms as the resultant of transaction-optimization, to stress that the reason why a given model develops may be contingent or consciously developed, but in any case holds an intrinsic potential for certain trajectories, depending on the context in which this model is developed. For example, the added value of considering de-integration to let private interests manage milk processing plants was illusory in the Walloon agro-industrial value chain, if only because of the structural features of the region were adverse to

such a configuration (chapter 2 and 3). The same model may, conversely, holds a potential of interest in an evolving context of consumption based on higher added value products. In any case, beyond what a given model enables and disables, long-term sustainability also lies in considering the intrinsic vulnerabilities of the model selected, its adverse effects on given social or natural subsystems (P. B. Thompson 2007) – for example the interplay with the farmer’s individual agency.

Wynne-Jones (2017)’s study uncovers, regarding the interplay with the farmer’s individual agency, an interesting aspect. The author goes beyond the classic approach of trust through the lens of social capital, mainly understood as the confidence that “their [the farmers’] collective action can be efficiently sustained and that they can benefit from it” (Chlebicka, Falkowski, and Lopaciuk-Gonczaryk 2017). Wynne-Jones indeed stresses that the affective dimension of belonging to a group, the sense of well-being linked to the social connection that a joint enterprise offers, plays a non-negligible part in the commitment of the farmers to the cooperative model. In this regard, the heterogeneity of the Walloon dairy sector in terms of farm model, the existence of patterns of competition among farmers, for example in terms of access for land, and an apparent poor consideration of collective action and of collaboration with other stakeholders (chapter 5), does not appear as an easy landscape. Our research uncovered that governance models, and in particular a combination of various coordination mechanisms among farmers’ cooperatives (chapter 4), had the potential to account for the heterogeneity of farm models and the related features of milk produced. These new governance models appear as innovative answers allowing to taking the needs and challenges linked to this heterogeneity of farm models into account (Apparao, Garnevaska, and Shadbolt 2019).

2.4. Qualitative approach and grounded theory as methodological assets

Our research not only consisted in an active engagement with stakeholders acting within and around dairy cooperatives in the Walloon dairy sector. The research was also based on an approach of issues grounded into what this engagement would reveal, following a grounded theory approach.

The consideration of how actors evolve and relate to the context, in which they are embedded, constitutes a research material that has the potential to uncover challenges and perspectives for future development. A hypothesis-free approach may not be valid at all times in a research process, but generated in our case key outcomes in an exploratory approach of the issues. The most delicate part of that process was, with no doubt, the extraction from the collected data of a coherent and databased set of results that may further be discussed in terms of outcomes and perspective. This process requires a constant vigilance from the researcher as to not neglect any angle revealed by the results or surimpose its own bias on what data disclose. From my perspective, and from my interactions with my master thesis students, I draw from that experience that the most accurate coding and extraction process, in this regard, is one that seeks to describe exhaustively first, before any attempt at categorizing. Coding categories should hence be descriptive, to start with, which then may lead to following successive steps of refined description, until a meaningful categorisation emerges from that descriptive process.

Incidentally, there lies also the basis of a historical investigation, which is all too wrongly seen by many as a discipline disconnected from present issues. "History can inform current and future scholarship by signalling the contextual and immediate factors that have played key roles in altering food system structure, governance and outcomes. Less clear, however is how such findings can be used to intentionally design, steer or engineer

complex food systems towards more sustainable states, and what capacities and conditions would be needed is such steering is possible” (van Bers et al. 2019). Our research demonstrate that the historical investigation not only makes the understanding of the roots of the current situation possible, from which any transition process will logically develop. This historical investigation also allowed a meaningful understanding of the mechanisms of governance in cooperatives that transcend time and context, and may duly contribute to intentionally design, steer or engineer complex food systems, or at least design policy frames adapted to accompany such a process.

3. Avenues for future research

We identify opportunities to pursue this reflection on organisations of collective agency, and in particular dairy and agri-food cooperatives, through the mobilization of various epistemological angles. We point out here, successively, interdisciplinary approaches on the farmers’ consideration of collective agency; the approach of cooperative governance through economics and organisational studies; and, a deeper connexion of the history of dairy cooperatives to the broader political and social evolution of the last decennia, through rural history.

We referred regularly, but did not discuss much, the question of the incentives for farmers to consider collective agency as a means to achieve certain goals, and to prioritize over short-term benefits for long-term achievements (O’Rourke 2007). A cooperative may or may not be vertically integrated, but always relies on a form of horizontal integration among farmers – that they act together instead of separately to achieve economic benefits that they could not achieve alone (Chlebicka, Falkowski, and Lopaciuk-Gonczaryk 2017). As stressed by Ajatez (2020), a crucial issue for cooperative development hence relies on the consideration of the social dimension of the interactions between farmers. Do farmers relate to the dairy cooperative as isolated welfare-

maximizers, or does the social dimension of the “joint pursuit of mutual advantages” play a role in their commitment to the dairy cooperative? Currently, legally enforced contracts may bind farmers to a cooperative scheme, and hence avoid some of the shopping effects observed in the historical trajectories. However, there is more to commitment than a legally enforced contract – commitment to a collective goal needs also human incentives. What drivers dairy farmers (and farmers in general) to develop a shared understanding of practices and related narratives (Hubeau et al. 2019)? This includes the consideration of where farmers place the boundaries of cooperative action, and whether that includes possible prescriptive measures on the way, he/she manages the farm (Wynne-Jones 2017; Forney and Häberli 2017). Farmers are milk suppliers to dairy cooperatives. They are also human beings, with an internal complexity and feelings that may play a role in their commitment towards collective action. Further interdisciplinary inquiries may help understand the effects of context, constraints, environment and practices on the farmer’s identity and attitude, including towards other farmers and towards collective action.

In terms of cooperative governance, we focused mainly on coordination models (chapter 3 and 4), that is the models emerging from a certain form of coordination among the vertical stages (spanning from milk production to dairy product marketing), and among the horizontal stages (how cooperatives of dairy farmers join in coordinated efforts). There are nevertheless additional dimensions to explore in this regard, from the angle from economics and organizational studies. For example, the exact characterization of governance forms – and not only in the dairy sector - in terms of property and decision rights (Hobbs 2017), and related contractual dimension would help to understand how these different forms frame individual and collective action, and how the features of transaction and governance costs of every form impacts its efficiency in a given context.

The sources explored for our historical investigation, (in particular the archival funds of the Fonds Fernand Lanotte - Archives de l'Etat à Arlon) contain material that sheds light on how the discussions among stakeholders on the trajectories of the Walloon dairy cooperatives connect to the wider agricultural, social and political issues at Belgian and at European level. This offers perspectives of meaningful investigation in rural history, with a deeper dive into the history and positioning of stakeholders (political parties, unions), and how their handling of the case of the dairy cooperatives connects to broader social and political issues. The studied material also provides relevant content to approach the historical trajectories of these stakeholders.

4. On policy-making and support to collective action in a complex environment

Policy-making is no easy task, the least so related to what concerns us here, that is the issue of organizing collective agency along pathways of change. Organizing collective agency is, as our research confirmed if ever needed be, a complex process. Designing a given pathway has to be reflexive as to the multiple feedback loops that might emerge, connect different scales, and present distinct features in different contexts. Hence, what can policy-makers do? Initiative in terms of governance structure is a matter in the hands of the sector's stakeholders. There is, nevertheless, a scale on which public intervention may act: that is, on the broader cultural and institutional context in which these stakeholders evolve.

We identify, in particular, three dimensions of policy action. The first dimension (1) relates to the connectedness of farmers to other farmers in collective action. There are aspects of the broader cultural and institutional context in which the farmers evolve and on which policy-makers may act. The second and third dimensions relate respectively (2) to the interaction between the farmer and the level of collective action,

including thus with other stakeholders and (3) to the narratives and shared conceptions of collective action developed among farmers and other stakeholders of the dairy sector. We identify, in these two dimensions, points of attention for policy makers and stakeholders, in particular for cooperative management.

The concern for the first dimension, the connectedness among farmers in collective action, stems from the features of dairy farming in the region. The Walloon region presents a heterogeneous landscape of farmers with farms growing in size and loosing contact with neighbours, on one hand, and a diversity of farm practices and farm size on the other hand, that play adversely on dialogue among farmers (chapter 5). Other case-studies reveal a similar effect of “the diminished social fabric of the rural community (...) and the routines of their working lives” on the interactions among farmers (Wynne-Jones 2017). At the individual level also, dynamics of competition may “reduce the potential for farmers to develop trusting relationships”(Wynne-Jones 2017). Our results (chapter 5) uncovered such a context of competition, drawing in particular from the issue of access to land and rooted in a tendency to compare one’s performances to the other farmers’.

A fundamental action hence resides first in tackling this issue of connectedness of farmers to other farmers. This connectedness somehow starts at the level of the farm, the reference unit of decision-making (Wynne-Jones 2017). Narratives related to good farming practices may go paired with exclusionary parables targeting farmers with different practices (Vanclay et al. 2006; Burton 2004a). Our study of the Walloon dairy landscape in this regard (chapter 5) uncover that, while critical of the practices of the farmers evolving in farming models distinct from theirs, the dairy farmers seemed also to understand the drivers leading farmers to different sets of practices. The analysis of the farmers’ identities also revealed that similar identities may lead to different practices. There is hence room for more dialogue among farmers as what unites them,

despite apparent differences of practices, and certainly more awareness, in particular of younger farmers, on the implicit world views that would lead them in a given direction. Appreciating the diversity of possible trajectories, their added value, and the constraints they bring, allows every farmer to select a trajectory consciously, rather on the base of integrated shared narratives. This calls for more attention to the self-reflexive aspects of trajectory selection in agricultural schools, including thus related to the more general psychological profile of the farmers.

A second fundamental action resides in tackling the contextual factors that contribute to increase the competition among farmers, access to land obviously coalescing many tensions in this regard (chapter 5, part 3). I will not go further on this vast topic here. Let us nevertheless stress the need to consider structural long-term solutions on this issue involving more than only farmers, namely a growing diversity of stakeholders pursuing a variety of motivations and interests (Sandwell 2016; European Focus Group on new entrants into farming 2016; Committee on Agriculture and Rural Development 2017; Agrosociences-Inrae 2020). Whether on that topic too, collective actions, among farmers and with other stakeholders, may be considered, in the Walloon dairy landscape, is an open question.

This last consideration leads us to the second dimension of policy action, which is the commitment of the farmer towards collective action. This dimension ties with the first dimension, in the sense that farmers need to develop an intimate belief that they, as individual, may benefit from a long-term proactive participation in this level of collective action. I understand “benefit from” here as encompassing the human dimension and not only the economic one, as discussed in the point 2 of this discussion. In this regard, our results (chapter 5) uncovered a form of estrangement of the interviewed farmers from other stakeholders of the dairy sector, including the dairy cooperatives of which they are members. The interviewees also expressed a form of distrust in front of milk

processors or brandholders with whom they may interact. Chapter 4 stressed that new cooperative models often included these stakeholders alongside the farmers in enterprises of collective action. Chapter 4 also uncovered possibilities of activities for mainstream dairy cooperatives in these new cooperative models that may be meaningful in terms of future development for cooperatives who do not have the scale to invest in costly new processing and marketing pathways likely to generate added value in a globalized landscape.

We uncover an issue of dialogue between farmers, cooperatives and other stakeholders, of which the importance has also been stressed by Fiore et al. (2020), in particular for the development of value chains with traceable or certified features (GMO free, origin-related). We will address this issue of dialogue hereunder when considering the third dimension of policy action. This important aspect of future governance models makes us also consider whether the strategic decision power of farmers, in the present value chain configuration, is favourable to their meaningful commitment. Not only is there an issue of power to act (de Haan and Rotmans 2018; McDonald and Macken-Walsh 2016), there is also the question whether the needs of the farmers are met in a given configuration of collective action and, if not, if a co-existence of models (chapter 4) might provide a better answer to these needs. This question is particularly relevant in the heterogeneous landscape of the Walloon Region in terms of farming models. As stressed by Wynne-Jones (2017), it is mainly about building a model where farmers may practice the exercise of making their voices heard, and similarly understand that, if their short-term individual interest do not always take precedence, that this doesn't necessarily entails "individual forfeit", but rather "mutual and shared amendments"(Wynne-Jones 2017). The condition, however, for this exercise of "cooperative know-how" (Wynne-Jones 2017) to take place, is that the farmer feels recognized as meaningful stakeholder of the cooperative building process. From the angle of stakeholders - policy

makers but also farmers and other actors active at the level of cooperative management - this includes acknowledging the heterogeneity of needs that might emerge from the variety of farming profiles present in the region.

Which brings us to the third dimension of policy action regarding this issue of collective action, namely the narratives and shared conceptions related to collective action. It seems fundamental that all actors involved in designing and steering initiatives of collective action understand one of the essential aspects uncovered through this research, that is that there are many different models of governance possible, none of which being good or bad in absolute, however all presenting their own specific added value and context-related vulnerabilities. It seems of paramount importance that a reflection on any value chain project in the dairy sector, and in the agri-food sector in general, includes the issue of governance and of the horizontal and vertical coordination mechanisms at the different levels of the food value chain. Strategic alliances span across a continuum of options (Hobbs 2017; Grandori 2017), each of which might or might not be the most systemically sustainable (as understood in point 2, seen under the angle of its effects on every of its interconnected subsystems), depending on the case-by-case particular context. The involved stakeholders, and in particular the farmers, will even more willingly contribute to a collective agency scheme, if they understand the features and limitations of each model and are able to agree mutually on the solution that fits with their own 'add-on' values and balances with the others' own 'add-on' values. This aspect of mutual agreement and dialogue makes sense, given the increasing emphasis on cooperatives, and in particular on multi-stakeholders cooperatives (like the ones studied in chapter 4), as a way to "achieve more than economic benefits" (Ajates Gonzalez 2017) and reconnect with the philosophical roots of cooperative development as a social movement supporting an "open and pro-commons economy" (Ajates Gonzalez 2017; Ajates 2020). More attention

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has hence to be given to the background allowing to address this challenge of awareness raising. That includes knowledge exchange in conventional education systems first. This also includes the institutional frames allowing intra-sectoral exchange and dialogue in this regard. Let us note that some organizations in the Walloon Region, of which actors were interviewed in the frame of this Ph.D., are already active alongside that path. The idea here is not to pretend bring novelty on this account, however rather to stress how much our research underlines the relevance of their efforts and contributions to building tomorrow's agri-food governance features along pathways of transition.

Conclusion

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Starting from an empirical approach, this Ph.D. navigated through the landscape of the Walloon dairy sector, and coalesced on a research question focused on the question of the past and prospective trajectories of the Walloon dairy cooperatives in terms of product diversification.

The past trajectories of the Walloon dairy cooperatives revealed attempts at coordination of the dairy cooperatives in consolidation processes that aimed at positioning the dairy cooperatives strongly on the markets and support investments in a variety of milk products (namely a diversification intended according to the first possible strategy, which is through investments at the processing and marketing stage). This strategy mainly failed because the dairy cooperatives did not manage to reach agreement on a consolidation model in a context of competition among dairy cooperatives for milk. The competition among dairy cooperatives was contextual (linked to the EEC – CAP policies), but also fed by the tension of interests existing between the dairy farmer-member as milk supplier, on one hand, and as principal investor, on the other hand. The structural factors of production of the region, the lack of cultural unified background and institutional support structures for dairy cooperatives, did not favour cooperation among dairy cooperatives in this context.

In absolute, a consolidation model may take many different forms, ranging from coordination to vertical integration of the different stages of the dairy value chain, and from coordination of independent dairy cooperatives to merger in a unique centrally managed dairy cooperative. Depending on the context and of the objectives, one model might be more adapted than the other to certain strategic objectives (like, for example, the support to regional dairy productions). However, the commitment of the farmer to the cooperative model remains a factor to be managed in all cases by the cooperative management.

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Innovative cooperative models that adopt de-integration strategies may, in coexistence with the historical vertically integrated cooperative models, effectively support the exploration of diversification pathways based on a differentiated definition of milk as raw material, i.e. linked to specific farming practices and models. The relationship between the farmer and the dairy value chain, including thus the cooperative, is characterized by features of embeddedness. Farmers may adopt certain practices and roles because they act in interaction with other stakeholders of the dairy value chain, from dairy cooperatives to agricultural schools. As individuals, their choices of practices involve also a consideration of the various constraints they face and the perceived outcomes of given pathways of development at farm level. The feeling of connection to other stakeholders of the value chain as possible partners in future pathways of development is not well developed. The development of a dialogue on broader pathways of development with these stakeholders appears as one of the clues for diversification pathways, in particular those that rely on a differentiated definition of milk – and related farming practices – as raw material.

This Ph.D. navigated through different disciplines and epistemological fields, defining a scientific object driven by an empirical approach of issues and outcomes related to the prospective pathways of the Walloon dairy sector. Theoretical frames, in this approach, were mobilized because of their relevance in supporting a data-based interpretation of these issues and outcomes. In particular, this interpretative mobilization of theoretical frames helped consider lock-ins to prospective pathways of product diversification as a complex and contextualized sets of factors, playing at different levels of the dairy value chain, and ranging from the farmers' identity to the cooperative structure. The insights of the Ph.D., although not mechanically predictive of what ought to be, or what ought to be avoided, act, in this regard, as a series of point of attention for strategic planning and management in the Walloon

dairy sector and in the agri-food sector more generally. The insights of the Ph.D also underlie possible further pathways of disciplinary and interdisciplinary investigation on structures of collective action and long-term collective trajectories in agrifood value chains.

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Post-scriptum

*Pas de doute, j'avais rendez-vous, là-bas, avec quelques-uns de mes
paysages mentaux (Michel Le Bris, La Porte d'Or)*

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A doctoral investigation is a journey. I had the immense privilege of being driven in that journey by curiosity and passion for a topic that matters to me, and that largely got shaped throughout interactions with actors “from the field”.

From a general question related to the future trajectories of the Walloon dairy sector, and focusing in particular on the role played by dairy cooperatives in these trajectories, we conducted a series of investigation that emphasized the importance for future trajectories of structures of collective agency. As body of decision-making, these structures are in interaction with individual farmers, and the interplay occurring there is of significance, as well for the strategic pathways taken by dairy cooperatives as for the individual pathways of the farmers.

The lesson I draw from this four-year’s experience, is that it is fundamental to consider pathways of change from more than a neo-liberal feature of individually-centred action and responsibility. Collective agency offers to individuals a lever of action they could not achieve alone. This is particularly true concerning the agri-food sector. This level of collective action is under the influence of complex dynamics, and particularly emerging from the individual-collective interplay. Considering the mechanisms underlying this interplay, and developing awareness of the tensions that may emerge from this interplay, is the key to developing successful, inclusive and sustainable initiatives of development at the level of the whole agri-food sector.

It is possible for a person who is morally committed to sustainability to be overwhelmed by a more comprehensive and unsustainable system” (P. B. Thompson 2007). Hence, any reflection on future pathways has to be systemic. I modestly hope that the reflections and findings made throughout this Ph.D., and summarized in the general discussion will stimulate a reflection in the Walloon dairy sector, and broader in the Walloon agricultural world. There is relevance in adopting an

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encompassing approach of sustainability issues. Neither the impact of the value chain on farming practices nor the issue of developing governance structures adapted to the goals the actors would like to reach, has to be neglected in the design of future pathways for the dairy sector, and the Walloon agri-food sector in general.

Change is a matter of creating dialogue and fostering strategies of cooperation. The farmers may be today the most prejudiced actors of the value chain within the globalization trend. However, other stakeholders of the value chain may ultimately also win by considering pathways of development based on new institutional logics (new formal and informal rules of practices and behaviours). The dairy cooperatives, to start with, could consider their possible integration in a wider ecosystem of processors through a pathway of development that integrates activities of services towards these processors. The many processors stuck in a system based on competitive prize-driven logics and the consumers, who often pay through health and environmental issues the price of unsustainable value chain production, could evolve in another, fairer and more sustainable dairy landscape. In this regard, new cooperative models may pave the way to the renewal of a cross-sectoral dialogue on the patrimonial dimension of food production, away from the now prevailing commoditization logics. Our study, in this regard, has only lifted one tiny corner of the much larger veil of how we might collectively pave our way into the future of our food production.

Change is about relying on a frame that offers individuals the opportunity to contribute meaningfully to a common trajectory that is bigger than they are. The connexion to their own needs, projects and dreams is, in this regard, paramount. It is up to the farmers to consciously reflect on how to define their individual and collective pathways, including in connexion with the wider society. It is up to the policy-makers to build up the frames allowing the farmers and other

stakeholders to talk their walk, and walk their talk (Schoeneborn, Morsing, and Crane 2020) into a sustainable dairy future.

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Annexes

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Annex 1 - Profiles of dairy productions in the Walloon Region (figures extracted from Maquet (2012))

Dairy products produced by the Walloon historical dairy cooperatives	
raw milk (l)	512.000.000
UHT milk(l)	192.050.000
concentrated milk (l)	12.000.000
cream (l)	46.000.000
milk powder (kg)	89.000.000
butter (kg)	20.000.000
buttermilk (kg)	2.000.000

Dairy products produced by processors (other than the historical dairy cooperatives) buying their raw material (milk, butter, cream, etc) either from the above-mentioned historical dairy cooperatives, or from other sources (foreign suppliers, and more marginally, direct delivery from farmers for short value chain operators and 2 cheese processors)					
	second stage processing industries	SME processors	short value chain operators	cheese processors	TOTAL
cheese (kg)		14.000.000	23.000	9.828.000	23.851.000
melted	51.000.000				51.000.000
cheese (kg)					
cream (kg)	3.000.000	150.000		130.100.000	133.250.000
butter (kg)	67.000.000	27.500.000	11.500	5000	94.516.500
(incl. repackaging)					
butter oil (kg)	10.000.000				10.000.000

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infant food (kg)	4.500.000			4.500.000
whole milk (l)		100.000		100.000
skimmed milk		50.000	160.000	210.000
milk powder (kg) (incl.repro cessing)		2.000.000		2.000.000
buttermilk (l)		3.000.000	5000	3.005.000
mix of powders (kg)		12.000.000		12.000.000
lactose (kg)		125.000		125.000
raw milk (l)			4.500	4.500
yaourt (l)			2.300	200.500
lactoserum (l)			180.000	465300
cheese ripening (kg)				275.000

Annex 2 - Matériel (sources et références) rassemblé pour la phase historique de la thèse (chap.2 et 3)

1. Archives

1.1. Archives publiques

1.1.1. Pouvoirs nationaux et administration nationale

Compte-rendus des réunions du comité ministériel de coordination économique et sociale (AGR) :

N°1354 – sous-dossier 513-10 (dossier intitulé « Restructuration de quatre laiteries coopératives wallonnes. S.C. Société beurrière d'Ardenne et Gaume ILA à Recogne, S.C. Centralait à Chimay et S.C. LACO à Nalines, S.C. Laiterie de la Sylle à Ghislenghien et S.C. Laiteries de Sambre et Meuse à Floreffe »).

- Séances du CMCES du 7.05.65, 26.11.68, 10.1.73, 17.7.75, 18.7.75, 24.7.75, 31.7.75 et 10.11.78
- Notes annexes aux séances du CMCES
- Séance du Comité Ministériel du Budget du 8.7.76.
- Courrier original signé, adressé par Jean-Pierre Lambin, Administrateur de la Laiterie-Beurrerie de Florennes, au ministre Charles Héger, le 19 juillet 1969

N°1355 - Dossier 513-10. Problèmes laitiers (séances entre 1962 et 1968)

Archives du ministère de l'agriculture (AGR)

DG2 (direction de la politique agricole –Directie voor landbouwbeleid)

Dossier n°107

Dossier FIA 1969-1986 – reconstruction de l'industrie laitière

Sous-dossier n°10 – intitulé « restructuration de l'industrie laitière en Wallonie ».

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Secretariat général du ministère de l'agriculture → consultation espérée en 2019, mais information reçue qu'elles reposaient toujours non inventoriées dans les caves du ministère des affaires économiques et n'étaient donc pas accessibles.

Autres archives recherchées mais sans que des dossiers pertinents y aient été trouvés : archives de l'Office National du Lait et de ses dérivés (sur base des inventaires de dépôt aux archives générales du royaume) ; archives de la DG3 (Administration de la gestion de la production agricole), archives de l'Office National des Débouchés Agricoles et Horticoles).

1.1.2. Pouvoirs régionaux

Archives de l'Exécutif Régional Wallon

Séance du 16 décembre 1988 – Document n° 0846 - Restructuration des laiteries wallonnes en un groupe à taille européenne

Séance du 13 septembre 1990 – Document n° 2709 - Restructuration des laiteries et peste porcine

Séance du 4 octobre 1990 – Document n° 2761 – Restructuration des laiteries

1.2. Archives privées

Contacts pris avec :

- la CBL : pas d'accès obtenu
- la FWA : pas d'archives conservées
- archives du Boerenbond (KADOC Leuven) : aucun des dossiers ci-dessous ne contenait de contenu pertinent

1) Archieven Boerenbond en landelijke gilden - Centraal archief Boerenbond - I. centrale bestuurs-en adviesorganen - centrale organisatie - centrale administratie - algemene diensten van de boerenbond- cöoperatiediensten - dossiers n° 505, 506 en 507 (zuivelconsultenschap)

2) Archieven Boerenbond en landelijke gilden - Centraal archief Boerenbond - I. centrale bestuurs- en adviesorganen - externe

Annex 2 – Material related to the historical investigation

relaties, dossier n°1058 (contacten met de AAB)

3) Archieven Boerenbond en landelijke gilden - Centraal archief Boerenbond - I. Centrale bestuurs- en adviesorganen - coöperatiewerking en andere economische activiteiten - Zuivelindustrie in Vlaanderen - dossier n°2358 (algemene informatie zuivel) ; dossiers n°2360 en 2362 (studies Bekaert-Stanwick) (indien raadpleegbaar).

4) Archieven Boerenbond en landelijke gilden - Archief Organisatiediensten van de Boerenbond - 2. De Ledenstructuren van de Boerenbond -2.4.7. Zuivel - dossier n°172 (Zuivelbonden en Zuivelconsultenschap) en dossier n°7 (dossier inzake het AVCZ)

5) Archieven Boerenbond en landelijke gilden - archief Boerenbond Dienst PR/Afdeling communicatie - 1.8 Andere dossiers, dossier n°163 (nota's inzake zuivelcoöperaties -1970).

6) Archieven Boerenbond en landelijke gilden - Archief Belgischer Bauerbund - Ostkantons - dossier n°31 (Wirtzfeld Zuivelfabrieken)

Archives privées de Fernand Lanotte – déposées aux Archives de l'Etat dans les Provinces – Archives de l'Etat à Arlon (Fernand Lanotte dirigea la laiterie de Carlsbourg depuis les années 50 jusqu'en 1968, et par la suite l'intercoopérative ILA – Recogne jusqu'en 1975. Il fut également actif au sein de l'Union de l'Industrie Laitière Belge dont il assuma la présidence, notamment entre 1962 et 1973).

- dossiers « ILA-RECOGNE » 618-0014 et 0015 (documents internes à ILA-Recogne, dont les statuts, les comptes de résultats).

- dossier 618-0016 « ILA-RECOGNE », rapports du conseil d'administration relatif à l'exercice 1965, détaillant notamment les motivations liées à la construction d'un site de production unique.

- dossier 618-0016 "ILA-RECOGNE", extrait de délibération de l'assemblée générale extraordinaire des coopérateurs du 24 octobre 1964 de la Laiterie de la Lomme à Recogne – copie certifiée conforme ; courrier du notaire Jacques Demblon, du 20 décembre 1965 to Fernand Lanotte, directeur de la société beurrière de Recogne.

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- dossier 618-0016, farde verte contenant un rapport *Situation de l'économie laitière dans le Sud du Pays, 1973* – annexe X (rapport attribué à Bernard Calicis, sur base de son indication, antérieure à la consultation du rapport, qu'il avait rédigé un rapport communiqué au cabinet du ministre de l'agriculture à l'initiative de Fernand Lanotte – Bernard Calicis a confirmé oralement être l'auteur du rapport en question)
- dossier 618-0039 « Sud-Lait 1975-1988 », rapport du 10 décembre 1973 « Groupe d'Etude – avenir des laiteries du Sud » - ce rapport constitue le procès-verbal d'une réunion rassemblant différents directeurs de laiteries des provinces du Hainaut, Luxembourg et Liège, et expose des projets de coopération sur le plan de la répartition géographique des productions et sur le plan de la commercialisation entre les laiteries du Sud de la Wallonie.
- dossier 618-40 "industrie laitière belge", Union de l'Industrie Laitière Belge, *Rapport sur la situation générale de l'industrie laitière belge, 1965*
- dossier 618-40 "Industrie Laitière belge", rapport du 19 mai 1963 par M.Berque, F.DAms, H.Godbille *La production et l'Industrie Laitière belge – résumé d'un travail réalisé par le Service de la Production de l'O.N.L.*
- boîte 618-0041 « Union de l'Industrie Laitière Belge », dossier « UILB-XI-XII 1975 », discours de K.Devriendt, directeur général honoraire de l'Office National du Lait à l'occasion de l'Assemblée Générale de l'Union de l'Industrie Laitière Belge du 26 mars 1975
- boîte 618-0041 « Union de l'Industrie Laitière belge », Evolution de l'Economie Laitière Belge – Synthèse des discussions approfondies d'un groupe de travail spécial créé au sein de l'Office National du Lait, 3 juin 1970 ; dossier « 1972. Etude d'un plan officiel de restructuration du secteur laitier ». Allocution de Fernand Lanotte, président de l'Union de l'Industrie Laitière Belge (UILB) et A.Lavens, Ministre de l'agriculture, à l'occasion de l'Assemblée Générale de l'UILB
- boîte 618-0041 rapport de la réunion restreinte de concertation dans le cadre C.B.L. tenue le 28 juillet 1971 dans les locaux de l'UILB.
- boîte 618-0041, courrier de A.Delhove, 5 Bruyères à 7198 Ronquières du 16 juillet 1971 à Monsieur Lanotte
- boîte 618-0041 « Union de l'Industrie Laitière belge », Evolution de l'Economie Laitière Belge – Synthèse des discussions approfondies d'un

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groupe de travail spécial créé au sein de l'Office National du Lait, 3 juin 1970

- boîte 618-0041, Rapport « Commission nationale du lait : groupe de travail de la commercialisation (non daté, estimé à 1971, le rapport faisant référence à une réunion récente tenu le 14 janvier 1971).

- boîte 618-0041, rapport du groupe « production » de la Commission nationale du lait, document dactylographié – petit carton annexé « Transmis documents complémentaires pour la réunion du 24.6.1971 de la Commission Nationale du Lait ». Bruxelles le 22.6.1971

- boîte 618-0041, compte-rendu de la réunion du 10 septembre 1970 de la Commission Nationale du Lait.

- boîte 618-0041, un dossier 1973, contenant l'allocation de Fernand Lanotte président de l'union de l'industrie laitière belge et Lavens, ministre de l'agriculture à l'occasion de l'AG de l'UILB

- boîte 618-0042 intitulée « Commission centrale belge du lait » (pas de documents pertinents pour la recherche)

- boîte 618-0043 « union des laiteries belges » Un dossier intitulé « correspondance membres ». On y trouve des échanges épistolaires intéressants datés de 1962 entre directeurs de laiterie

- boîte 618-0044 « Union des laiteries belges », Rapports annuels de l'Union de l'Industrie Laitière Belge (UILB), entre 1969 et 1974 ; dossiers divers relatifs à la constitution de l'UILB, séries de correspondances peu pertinentes par rapport à l'objet de la recherche.

- dossier 618-0045 "Office National du Lait", lettre du 21 décembre 1962, écrite par le directeur de l'Office National du Lait K.L.Devriendt, à Fernand Lanotte, directeur de la laiterie de Carlsbourg et à l'époque président de l'Union de l'Industrie Laitière belge (d'après de la correspondance présente dans le dossier 618-0043, sous-dossier « correspondance membres »). La lettre invite Fernand Lanotte à rejoindre la Commission Nationale du Lait nouvellement créée.

- dossier 618-0045 « Office National du Lait ». Rapports des réunions de la Commission, du 20 décembre 1962 au 9 février 1963.

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- dossier 618-0045 "Office National du Lait », lettre du 4 février 1963 du Secrétaire Général de l'Union de l'Industrie Laitière Belge, G.Vandenabeele et sondage d'opinion joint relatif à la rationalisation du secteur laitier.
- dossier 618-0045 "Office National du Lait", proposition de la Commission Nationale du Lait du 27 mars 1963, transmis au Ministre de l'Agriculture d'après le PV de la réunion de la Commission Nationale du Lait du 17 avril 1963.
- dossier 618-0045 « Office National du Lait », Programme de politique agricole établi en commun par l'Alliance Agricole Belge, le Boerenbond Belge et les Unions Professionnelles Agricoles, document dactylographié, daté au 13 novembre 1962.
- dossier 618-0057 « UPA Alliance agricole Cambre provinciale d'agriculture » – différentes correspondances entre les syndicats agricoles et le directeur de la coopérative ILA (province of Luxembourg) – farde par syndicat agricole.
- dossier 618-0057, farde « UPA » - Réunion des laiteries coopératives du 21 janvier 1971, document à entête de la F.N. des UPA.
- dossier 618-0067 13 Conseil économique et social de la région wallonne CESWR (pas de dossiers pertinents pour la recherche)

Archives privées de Bernard Calicis (attaché à l'intercoopérative Centralait jusqu'en 1975 – par la suite directeur et administrateur de la laiterie Coferme en province du Hainaut, actif dans de multiples organismes de conseil relatifs au développement de la botte du Hainaut jusqu'en 1995).

Archives relatives à la situation générale en Wallonie et aux rapports entre laiteries :

- contrat entre l'Abbaye Notre-Dame de Scourmont et la laiterie de Forges concernant la fabrication à façon de fromages, photocopie d'un document dactylographié signé, 1961.
- Courrier de Bernard Calicis à Victor Trinon, écrit à Forges le 13 août 1975 – version dactylographiée partiellement surlignée, non signée
- Situation comptable de l'entreprise LACO à Nalinnes (entreprise privée se fournissant en lait auprès de la laiterie de Forges) entre 1968 et 1973 : documents dactylographiés et tableaux manuscrits

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- Bilan comptable de la laiterie de Malmedy en 1974, document dactylographié
- Courrier de Victor Trinon au Ministre Lavens du 2 février 1976 – analyse de la situation de l'entreprise LACO à Nalines et projets relatifs aux outils de production en Wallonie. Copie d'un document dactylographié et signé par Victor Trinon.
- Courrier du 13 novembre 1975 de Sud-Lait aux coopérateurs (courrier dactylographié, non signé). L'entreprise évoque les objectifs stratégiques de Sud-Lait et pousse les éleveurs à adopter un cheptel correspondant aux objectifs de production de lait.
- contrat de services entre l'Abbaye Notre-Dame de Scourmont (Chimay) et Sud-Lait, document dactylographié signé original du 1^{er} avril 1976. Divers échanges de courriers relatifs à la mise en œuvre de la convention entre l'abbaye (représentée par Bernard Calicis) et Sud-Lait à propos de la mise en œuvre de la convention. Courrier précédant la signature de la convention du 27 février 1976 adressé par Sud-Lait à l'Abbaye, dactylographié, original, signé. Second courrier précédant la signature du 16 mars 1976 (original, signé) ;
- Note dactylographiée datée du 1^{er} février 1978 (note interne – probablement à la STA) relative à l'impact de la création de Sud-Lait dans l'Est de la Wallonie.
- Courrier dactylographié et signé de Georges Bouillon, Division-Ferme, à la direction (supposément de Sud-Lait) du 8 mars 1977, comprenant les chiffres de répartition des kilogrammes de crème encore récoltés.
- Note dactylographiée intitulée « réunion de Dinant le 22.03.77 » entre Monsieur Bouillon, Division Ferme, et les agriculteurs. Concerne les frais de ramassage et le destin des petits producteurs.
- Note distribuée en 1979 par Georges Beuckens, administrateur de Sud-Lait, aux agriculteurs de la région du Sud-Est. Note dactylographiée, annotée à la main.
- *Rapport introductif à l'action de valorisation des productions naturelles de l'entre-Sambre-et-Meuse : label de qualité, coopérative laitière, transformation des produits laitiers.* Document dactylographié, annoté « Note rédigée par Intersud ».

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- Compte-rendu de la réunion du 16 février 1978 intitulée « Coferm/problèmes de valorisation de la production laitière ». Courrier à entête d'Intersud, association intercommunale pour le développement économique et l'aménagement du territoire du Sud-Hainaut, signé par M.Franssen, Président, adressant le compte-rendu aux participants de la réunion.
- Note dactylographiée non datée présentant le contexte du projet de création d'une fromagerie à Chimay (constitution de Sofrem). [avant 1979 puisque constitution de la société le 22 novembre 1979 selon les statuts]
- Comptes annuels au 31/12/1978 et au 31/12/1980 de Sud-Lait et de la société Jacky à Anvers (documents dactylographiés – référencés pour dépôt)
- Courrier du 16 février 1978 par Dom Gueric Baudet, Abbé de l'Abbaye Notre-Dame de Scourmont (Chimay) adressé au Ministre de l'Agriculture – Note associée du 16 février 1978 intitulée *Position de l'Abbaye de Scourmont par rapport aux problèmes laitiers actuels*.
- Courrier de l'abbaye Notre-Dame de Scourmont à Maître Renard du 20 octobre 1980, à propos d'un différend avec Sud-lait concernant la présence de limaille de fer dans les caillés
- Courrier d'Interlait à l'avocat Paul Christian, daté du 6 janvier 1981, à propos de la rupture de contrat unilatérale par l'Abbaye de Scourmont.
- Divers courriers entre l'abbaye Notre-Dame de Scourmont et les avocats entre janvier et juin 1981, à propos du litige avec Sud-Lait concernant la qualité des caillés produits à la laiterie de Forges
- Allocation de Pierre Mousset, président de Sud-Lait, du 22 juin 1981 à l'hôtel Sofitel de Wépion, lors de la réunion d'information aux parlementaires wallons.
- courriers adressés par C.Van Impe (directeur de la laiterie de Erfelingen) le 9 août et le 11 août 1981 aux éleveurs qui travaillent avec le chauffeur Michel Thomas – courrier de démarchage auprès d'éleveurs livrant leur lait à Coferm.
- Discours de Jean-Pierre Champagne au 56^{ième} congrès des UPA de 1981 – Palais des expositions, Namur, le 19 février 1981.

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- Courrier du 14 mai 1981 signé par Jean-Pierre Champagne, entête de la Fédération nationale des Unions professionnelles agricoles (UPA), adressée à Monsieur André Constant, à propos du refus de ce dernier de payer sa cotisation. Le courrier évoque la position des UPA vis-à-vis de la création de Sud-lait.
- Note dactylographiée relative au paiement du lait à la protéine, non datée, annotée au crayon « Rapport réunion de producteurs Syllac – donnée Comelco »
- Note interne dactylographiée et non datée, sur papier à entête de Sud-Lait, relative à l'introduction du paiement de la protéine. La note évoque l'introduction du paiement à la protéine comme un moyen de mieux contrôler les fraudes à la livraison de lait (lait mouillé).
- Convention entre Coferme et Sud-Lait, du 4 août 1981, copie de la convention manuscrite signée par les parties. Avenant du 6 août 1981 (même forme).
- Document dactylographié intitulé « synthèse de l'exposé de J.P.Ureel, directeur du département économique de la FIA, sur l'industrie agro-alimentaire en Wallonie ». Dans le cadre du Premier forum des industries agro-alimentaires en Wallonie, organisé conjointement par la FIA (fédération des industries agricoles et alimentaires) et l'Union Wallonne des Entreprises, le 1^{er} février 1983, au Château de Namur. Le document met en évidence des différences entre Flandre et Wallonie.
- Courriers sur lettre à entête de Mc Kinsey adressé le 8 mai 1984 à Bernard Calicis, Directeur de la Société Coopérative des Services Techniques et Administratifs (STA). Invitation à la « présentation des conclusions préliminaires du diagnostic de l'étude du secteur laitier wallon que nous a confié l'Exécutif régional wallon ».
- courrier à entête de Mc Kinsey datant du 21 mai 1984, adressant « un mémorandum aux participants de la réunion du 14 mai 1984 »
- Mémorandum intitulé *Renforcer les filières agro-alimentaires wallonnes. Réunion de travail avec l'industrie laitière*. Adressé par McKinsey aux participants de la réunion du 14 mai 1984.

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- Mémoire intitulé *Renforcer les filières agro-alimentaires wallonnes. Réunion de travail avec l'industrie laitière*. Adressé par McKinsey aux participants de la réunion du 26 juin 1984.
- Rapport édité par Mc Kinsey, intitulé *Renforcer les filières agro-alimentaires wallonnes. Phase 1 : diagnostic global*. 27 avril 1984. Document dactylographié.
- Note dactylographiée, rédigée par Georges Goffin (collègue de Bernard Calicis à la STA) suite au mémorandum de la réunion du 26 juin 1984
- Note manuscrite sur les actions à mener suite au bureau de Sofrem du 25 avril 1988, en réaction à la volonté du Minsitre Lutgen de mettre en œuvre « les remarques faites lors du 3^{ème} plan du rapport Mac Kinsey »
- Note dactylographiée adressée par Bernard Calicis à Clément Crohain, datée du 28 juillet 1988, note « écrite rapidement sur le problème 'laitier' » comme indiqué dans la lettre d'adresse, 4 pages dactylographiées. Proposition de gestion commune des enjeux entre les laiteries.
- Document de travail au bureau n°68 ADR : anticipation de ce qu'ils décrivent comme une « bataille du lait dans la perspective de 1992 ». Notes manuscrites associées de la réunion avec Gérard Sidot, Directeur Adjoint du Bureau Technique de Promotion Laitière – et références à des démarches similaires entreprises par Chéoux.
- Discours de Bernard Calicis au Secrétaire Général, au Bourgmestre et échevins, non daté, dactylographié et annoté, exposant la stratégie des acteurs de l'est de la Belgique vis-à-vis de l'ouverture des marchés de 1992. Document non daté.
- Note dactylographiée, annotée à la main comme un « extrait du PV du bureau ADR du 1^{er} août 1988 ». Fait état de stratégies des groupes laitiers étrangers pour saturer leurs propres outils.
- Comptes-rendus manuscrits des rencontres concernant Chéoux et Coferme entre Bernard Calicis et Emmanuel Van Den Doren, des 12 et 20 avril 1988
- Courrier du 19 avril 1988 à entête de la Laiterie de Chéoux, adressé à Coferme, Pierre Ska, Président et Bernard Calicis, directeur. Représente le contenu des entretiens qui ont eu lieu et précisant la position de Chéoux en matière de collaboration. Courrier original signé.

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- Comptes-rendus manuscrits des réunions internes à Coferme de discussion relative aux échanges avec Emmanuel Van Den Dooren (notamment une rencontre entre Pierre Ska e Emmanuel Van Den Dooren du 16 juillet 1988).
- Document à entête de la coopérative de Chéoux spécifiant les devoirs des éleveurs livrant leur lait et les contreparties offertes en échange par la laiterie (document dactylographié, non daté).
- Duplicatas des courriers entre Pierre Ska, Emmanuel Van Den Dooren, Eudore Debarsy (président du CA de Chéoux), Clément Crohain, Secrétaire Général du Ministère de l'Agriculture, à propos des relations entre Sud-Lait, Coferme et Chéoux, datés des 16 et 17 mai 1988.
- Note manuscrite non datée intitulée « Proposition à faire à Chéoux ». Même écriture que les compte-rendus manuscrits des rencontre entre Bernard Calicis et Emmanuel Vandendooren
- Document de travail ADR n°91, rédigé par Bernard Calicis le 02 juin 1989, intitulé *Elements pour l'élaboration d'une politique de développement de l'activité agro-alimentaire en Entre-Sambre-et-Meuse*. Document dactylographié. Analyse de la situation de la Wallonie et de la manière avec laquelle les entreprises de l'est de la Wallonie peuvent se positionner.
- Copie d'un courrier signé, adressé par Sud-Lait (en la personne de JM Demeyr, Directeur Général et H.Youcken, Directeur récolte), adressé à Coferme le 19 décembre 1988, protestant contre le non-respect par Coferme de la convention entre les deux entités et indiquant que le complément de prix de 10 centimes de francs par litre ne sera dès lors désormais plus payé à Coferme.
- Copie du courrier adressé par Coferme à Sud-Lait le 28 décembre 1988 en réponse au courrier de Sud-Lait du 19 décembre 1988.
- Compte-rendu de la rencontre entre Sud-Lait (représenté par Pierre Mousset et Jean-Marie Demeyr) et Coferme (représenté par Pierre Ska et Jean Sybille), du 30 août 1989 – portant sur les dissensions entre les deux parties sur le paiement du lait à Coferme ; et portant sur le projet de constitution du Groupe Interlait.

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- Courrier à entête de Coferme, du 24 janvier 1990, adressé aux producteurs laitiers, pour expliquer la rupture de contrat entre Coferme et Sud-Lait.

Archives relatives à la gestion des rapports entre acteurs dans la botte du Hainaut :

- Compte-rendu dactylographié de la réunion du 18 janvier 1978, entre COferme, la laiterie Saint-Antoine et Intersud, détaillant les arrangements de prêts matériels et financiers à Coferme.
- Copie de la convention originale signée entre Coferme et la laiterie de Oetingen. Copie du règlement intérieur de la coopérative de Oetingen et des actes relatifs à cette coopératives. Convention liée à la liquidation de la laiterie Saint-Antoine et règlement des créances avec Coferme le 31 mars 1982.
- Document de création de la société Promoder, document dactylographié et signé (copie), pour Société coopérative de promotion de recherche et d'études pour le développement d'initiatives économiques régionales [1984]
- Acte notarié du 21 septembre 1989 transformant la S.C. Promoder en une Société anonyme, augmentation de participation au capital
- Document de travail pour le bureau ADR n°16, 24 mars 1987, document dactylographié, fixant les modalités de soutien financier et en ressources humaines de l'ADR à Promoder. Intéressant car les noms des acteurs mentionnés, on retrouve les mêmes acteurs que ceux actifs au niveau du lait.
- Note au conseil d'administration de Coferme du 6 mars 1989 établissant des rapports entre Promoder et Coferme.
- Document de travail pour le bureau n°8, rédigé par Bernard Calicis, document dactylographié à entête de l'ADR (association pour le développement rural ASBL) daté du 22 septembre 1986. Réflexion relative aux prix pratiqués entre Coferm (fourniture de lait), Sofrem (fabrication des fromages) et la brasserie de Chimay (commercialisation des fromages) et proposition de prix et de répartition des marges entre les acteurs.

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- Document à entête de l'ADR, intitulé *Elements pour un plan à moyen terme de développement rural global*, rédigé par Bernard Calicis, le 7 avril 1988.
- compte-rendu de l'entrevue du 5 octobre 1989, document dactylographié à entête de la Sofrem, rédigé par Pierre Ska. Accord entre Sofrem et Coferme relatif à la fourniture du lait destiné à être bactofugé à Passendaele.
- réunion Coferme-Sofrem du 11 mai 1989, compte-rendu dactylographié rédigé par André Vercruyssen, à propos de la séparation du centre de collecte de lait et de l'atelier fromagerie et à propos des enjeux sur la qualité du lait, avec l'idée qu'il faille répartir les mauvaises fabrications liées à la présence de germes butyriques entre Coferme, Sofrem et BDC.
- Convention entre la S.A. Chimay et la S.C. Sofrem du 8 février 1990 à propos de la prise en charge des fromages déclassés et des échantillons. Document dactylographié, non signé, mention « note au bureau n°3 »
- Convention d'augmentation de capital de la SOFREM par intégration des apports de la S.A. Chimay-Gestion sous forme d'un terrain, convention du 9 novembre 1989 (document dactylographié non signé, annoté à la main sur les actions qu'induisent la convention.
- courriers échangés avec des laiteries du Nord de la France (Est-Lait Lorraine – Union Latière de la Meuse du 17 octobre 1984 ; contrat de fourniture entre Coferme et Ucanel du 16 octobre 1989.
- compte-rendu dactylographié d'une visite à Passendaele des dirigeants de la Sofrem du 10 août 1989, porte sur la suspicion de la laiterie flamande que la forme du vieux Chimay ait été copiée sur celle du Passendaele
- divers schémas relatifs aux relations entre les structures et aux positions respectives occupées par chacun des acteurs.

Archives privées Jean Pirlot (administrateur de Coferme)

- Rapports de gestion du CA de Coferme (Société coopérative fermière de l'entre-Sambre-et-Meuse) pour l'exercice 2000. Note à l'AG du 7 mai 2001. Compte-rendu de l'AG du 11 mai 2001. Note de 2005 également (non consultés à ce stade, mais disponibles si nécessaires).

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- Descriptif – bilan relatif à l’historique de la SOFREM, document dactylographié daté du 22 octobre 1982, rédigé par Jean Sybille
- Rapports de gestion de Coferme entre 2000 et 2005
- Compte-rendus du conseil d’administration de Coferme de 1982 à 1995.

Archives privées Jean Sybille (directeur de la laiterie durant les décennies 80, 90 et 2000).

Compte-rendu d’un entretien oral réalisé Par Mr Van Mol de Jean Sybille, directeur de Coferme jusqu’en 2000. En préparation d’un ouvrage sur le développement régional dans l’est de la Wallonie. Entretien réalisé le 14 février 2005.

2. Sources orales (entretiens réalisés entre septembre et décembre 2017) :

- m1, membre du secrétariat général du ministère de l’agriculture jusqu’en 1978 et du cabinet du ministre de l’agriculture entre 1978 et 1987.
- m2, adjoint du secrétaire général du ministère de l’agriculture de 1970 à 1978 et chef de cabinet du ministre de l’agriculture de 1978 à 1987 et secrétaire général du ministère de l’agriculture entre 1987 et 1995.
- m3, membre du secrétariat général du ministère de l’agriculture de 1978 à 1986 et membre du cabinet du ministre de l’agriculture De Keersmaker de 1987 à 1992
- p1, éleveur laitier, président de la laiterie Sud-Lait de 1980 à 1988
- p2, éleveur laitier, administrateur et président de la laiterie de Walhorn entre 1990 et 2001
- d1, employé à la laiterie de Herve et au Comité du Lait dans les années 80, recruté par la laiterie de Walhorn au début des années 90.
- d2, employé de la laiterie de Forges, ensuite directeur de la STA (société de support administratif et technique liée à Coferme), conseiller auprès de Coferme et président de la fromagerie Sofreme (dont Coferme était coopératrice) entre 1976 et 1990
- d3, directeur de la laiterie de Walhorn entre 1988 et 2001

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- d4, employé à la laiterie de Seloignes depuis 1965, administrateur et directeur de la laiterie coopérative Coferme des années 80 à 2002.
- d5, employé d'usine, laborantin et ensuite directeur de la laiterie régionale de Herve entre 1982 et 1990.
- d6, directeur de la laiterie coopérative de Chéoux de 1974 à 2001
- d7, administrateur de la société coopérative (coopérative non agricole) SOCABEL de 1960 à la fin des années 80.
- a1, administrateur de la laiterie Belgomilk entre 1990 et 1999 et de la laiterie de Büllingen après 1999.
- u1, en charge du secteur laitier et ensuite secrétaire général des UPA, actif de 1974 à 1991.
- u2, secrétaire de l'UDEF (Union pour la défense des exploitations familiales), années 70 et 80.

3. Sources publiées

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“Franse studie over de zuivelnijverheid”, *Maandblad van de ACVZ*, n°11/3, maart 1974

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“Rol en betekenis van de ACVZ”, *Maandblad van de ACVZ* n°11/6, juni 1974

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Institut national de statistique, *Bulletin de statistique*, 1976, n°10 (octobre) – 62^{ème} année, article intitulé « L'activité dans l'industrie laitière en 1975. Structure des entreprises ».

« Evolution dans l'action de l'office national du lait ces dernières années », in *Le Lait et Nous*, n°2, 1976.

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Annex 3 - Guide d'entretien – acteurs représentants des organisations du secteur laitier wallon actuel (chap.4)

- pouvez-vous me décrire votre parcours personnel ? Et ce qui vous a amené à votre fonction actuelle ?
- pouvez-vous me décrire votre organisation, son historique et son rôle vis-à-vis de la filière laitière ?
- s'il s'agit d'une entreprise :
 - comment envisagez-vous votre marché ? Faites-vous une différence entre la Wallonie et ses autres régions frontalières ? Avec la Flandre ?
 - comment prenez-vous en considération les spécificités transfrontalières ?
- quels rapports avez-vous avec les éleveurs ?
- quelle vision du passé ? quelle vision de la situation actuelle ? quelle vision d'avenir ? (bien voir s'il s'agit d'une vision personnelle ou d'une vision partagée au niveau de l'organisation – et si il y a eu un consensus au sein de l'organisation sur ce plan).
- Quels sont les acteurs avec lesquelles vous travaillez de manière privilégiée ? Pourquoi est-ce que ça fonctionne avec eux ?
- Quels sont les acteurs avec lesquels vous expérimentez des difficultés ? A quoi est-ce dû ?
- Quels sont les acteurs avec lesquels vous ressentez un accord en termes de vision sur le secteur laitier ?
- Quels sont les acteurs avec lesquels vous ressentez un désaccord en termes de vision sur le secteur laitier ?
- Quels sont les acteurs avec lesquels vous souhaiteriez collaborer à l'avenir, mais vis-à-vis desquels les contacts ne se sont pas encore concrétisés ?
- quelles collaborations avec la Flandre ?

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- quelles collaborations internationales ?
- Comment vous positionnez-vous par rapport aux politiques publiques ? (Européenne, régionale)
- Comment vous positionnez-vous par rapport aux politiques des ministres de l'agriculture et de l'environnement ?
- Quelles seraient, d'après vous, les mesures à prendre dans le secteur laitier wallon ?
- Si la personne est un éleveur et même si pas, d'ailleurs :
 - quels rapports avez-vous avec les autres éleveurs membres et non membres de votre organisation ?
 - Quel impact votre participation à l'organisation a-t-elle eu sur vous en tant qu'éleveur ?
- Qu'est-ce qu'un lait de qualité selon vous ?

Annex 4 - Guide d'entretien – éleveurs et fromagers
explorant des alternatives aux laiteries coopératives
(chap. 5 – part 1)

Bonjour Madame/Monsieur ...

Je me présente : je réalise un mémoire dans le laboratoire du Professeur Philippe Baret à l'UCL.

Mon mémoire a pour objectif d'étudier les circuits de transformation fromagère dans le secteur laitier dans une optique comparative. Nous souhaiterions comprendre quels sont les éléments qui poussent les agriculteurs à développer ou à rejoindre ces circuits et quels sont les éléments qui les freinent.

Dans cet objectif, nous avons décidé de rencontrer des agriculteurs/acteurs engagés dans ce type d'initiatives. C'est pourquoi j'ai sollicité un entretien auprès de vous. Je souhaiterais vous poser une série de questions.

1^{ière} partie : présentation de l'exploitation et historique du développement de l'activité de commercialisation

1. Pouvez-vous me présenter votre exploitation/entreprise et ce qui vous a conduit à orienter votre exploitation dans son orientation commerciale actuelle ?

2. Comment cette nouvelle orientation s'est-elle concrètement mise en place ?

En fonction de l'interlocuteur (parle beaucoup ou pas, donne beaucoup de détail ou pas) : on ajoutera aux questions 1 et 2 une ou plusieurs des sous-questions suivantes :

- a) Pouvez-vous m'expliquer ce qui vous a poussé à orienter votre

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exploitation dans cette voie ?

- a. qui est à l'origine de cette idée de reconversion ?
 - b. Quelles pratiques d'écoulement de vos produits aviez-vous auparavant ?
 - b) Avez-vous réalisé des essais dans d'autres voies ? Ces essais se sont-ils révélés concluants ou pas ?
 - c) Est-ce que l'exploration de nouvelles voies commerciales s'est accompagnée de modifications dans la conduite de votre exploitation ? (ex : changement de race, modification de régimes alimentaires, de l'origine de l'alimentation, de la gestion fourragère).
 - d) Suivez-vous un cahier des charges ? Par qui a-t-il été défini ?
 - e) Comment avez-vous acquis les compétences nécessaires et quelles ont été vos sources d'information ? Les jugez-vous adaptées ?
 - f) Quelles ont été vos sources de financement ?
3. Quel impact cette nouvelle voie commerciale a-t-elle eu sur vous et sur votre métier ?
 4. Pouvez-vous me décrire avec qui vous travaillez pour écouler vos produits ? Comment se passent les relations commerciales avec eux (aspects prix, etc).
 5. Comment percevez-vous les attentes des consommateurs ? Comment vous situez-vous par rapport à cela ?
 6. Avez-vous de nouveaux projets en vue ?

2ième partie : facteurs favorisant l'activité de commercialisation

1. Quels sont, d'après vous, les facteurs, les ressources, les personnes qui vous ont contribué positivement au développement de votre activité ?
2. Qu'est-ce qui, d'après vous, explique que votre activité soit un succès ?

On cochera dans la liste suivante les éléments spontanément évoqués par l'agriculteur (et on élargira si nécessaire la liste des éléments évoqués) :

- *Échanges entre agriculteurs*
- *Proximité des clients*
- *Labels*
- *Organismes publics*
- *Influence régionale (contexte particulier local)*
- *...*

En fonction de ce que qui est évoqué oralement par l'agriculteur/acteur, on approfondira ses propos spontanés au moyen des sous-questions suivantes (facultatives et à adapter en fonction de la situation) On gardera à l'esprit que certains éléments n'auront pas été mentionné spontanément par l'agriculteur.

- a) De manière générale, avez-vous le sentiment d'être bien soutenu et par qui en particulier?
- b) Connaissez-vous les autres agriculteurs qui utilisent les mêmes circuits commerciaux que vous ? Quels sont vos rapports avec eux ? Leur profil d'exploitation est-il similaire au vôtre ?
- c) Y-a-t-il des échanges ou des réunions entre agriculteurs qui adoptent les mêmes pratiques commerciales que vous ?
- d) Pensez-vous qu'un circuit comme celui au sein duquel vous êtes pourrait avoir le même succès (ou plus ou moins) dans d'autres régions que la vôtre ?
- e) Que pensez-vous des labels ? Les jugez-vous utiles ?
- f) Quel rôle attribuez-vous au consommateur dans le succès de votre entreprise ? (voir ce que l'agriculteur cite, comme par exemple les effets de bouche-à-oreille, fidélisation, etc)

3ième partie : limites et facteurs de freins du développement de l'activité de commercialisation

1. Quels sont, d'après vous, les éléments qui vous ont freiné lorsque vous avez développé votre activité ? Quelles ont été les plus grosses difficultés ?
2. Quelles sont les difficultés majeures que vous rencontrez dans la poursuite de votre activité ?
3. Si vous deviez recommencer aujourd'hui, quel choix feriez-vous ? Que changeriez-vous ?

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4. Connaissez-vous des exploitants qui ont abandonné la voie que vous explorez aujourd'hui ? Quelles sont d'après vous, les raisons de leur abandon ?
5. Comment voyez-vous l'évolution, à l'avenir, de votre ferme et des autres exploitations qui sont engagées dans la même voie que vous ?

Ne pas oublier de demander :

- Quels artisans fromagers ils connaissent
- S'ils connaissent des agriculteurs qui livrent leur lait à des petites laiteries fromagères

Annex 5 - Guide d'entretien – analyse des liens entre pratiques et identité des éleveurs (chap. 5 – part 2 and 3)

Guide d'entretien préparé conjointement par les mémorants Claire Pirlot et Mathieu Weinreb-Villard

OBJECTIF DE MÉMOIRE

L'objectif du mémoire est de voir s'il y a un lien entre les **pratiques agricoles** dans le secteur laitier wallon et l'**identité** des acteurs. Pour cela il faut passer par l'analyse de plusieurs sous-objectifs ou questions :

- L'identité des éleveurs s'exprime-t-elle totalement dans les décisions ? (**identity salience**)
- A quel point l'identité de l'éleveur est-elle **influencée** par le **contexte social** ?
- Si l'éleveur agit comme il le fait, c'est le résultat d'une négociation entre **son idéal**, ce qu'il connaît des **pratiques possibles** et la **norme sociale** ou jugement de valeur attribué à une pratique. Sachant cela, est-il possible de mettre en avant ce phénomène de **négociation** ?

A partir des informations obtenues lors d'entretiens compréhensifs (semi-dirigés) il faudra donc tâcher de répondre à ces questions et de voir s'il existe un lien entre les pratiques (issues des négociations) et l'identité exprimée (après influences du contexte social). Nous nous concentrerons sur une **sous-région** (Hainaut ou Liège) et tâcherons donc de voir s'il existe des spécificités à ces sous-régions. Dans cette démarche, nous essayerons également de comprendre la **vision que ces éleveurs ont d'eux-mêmes**, et la vision qu'ils ont de leur **avenir**.

THÈMES ABORDÉS

Les thèmes théoriques principaux sont en gras dans l'objectifs :

- Pratiques agricoles
- Identité
- Prépondérance de l'identité (identity salience)
- Contexte social influant (effets des significant others)
- Idéal personnel
- Répertoire de pratiques
- Jugement de valeur sociétal
- Négociation
- Vision de soi
- Vision de l'avenir

De manière plus pragmatique, il est possible de donner quelques sous-thèmes adjacents plus faciles à capter sur le terrain lors du dialogue :

- **Pratiques agricoles** : importance de la diversification/transformation/du bio ; fonctionnement de la ferme ; évolution des pratiques dans le temps ; employés ; conseillers/conseillères ; importance du produit (lait)

- **Identités** : provenance ; étude ; vocation ; opinions ; enfance

- **Contexte social** : famille (enfants, compagnon/compagne, parents...) ; implication dans la ferme de la famille ; influence de la famille (sur négociation et identité) ; influence du voisinage ; jugement normatif des voisins ; tradition régionale (hétérogénéité ?) ; différences homme-femme

Annex 5 – Interview guide related to chapter 5 parts 2 and 3

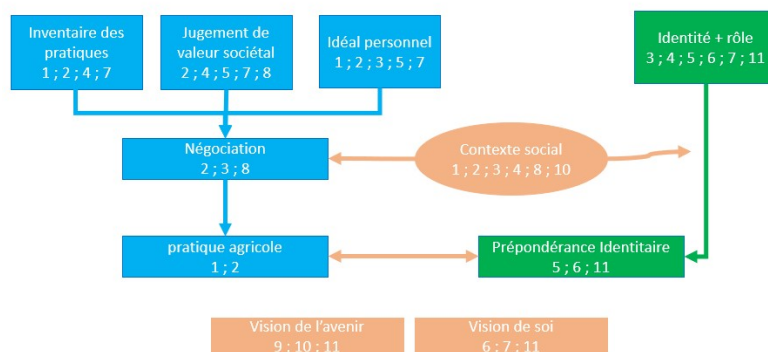


figure 1 : dimensions de la recherche couvertes par les différentes questions (les numéros correspondent aux numéros des questions)

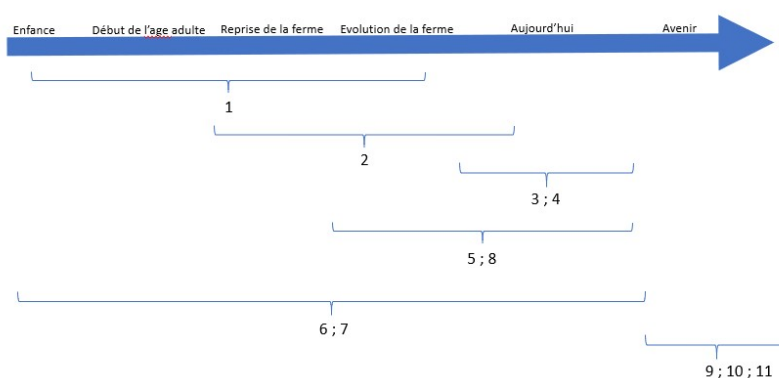


figure 2 : manière avec laquelle les questions s’articulent par rapport au parcours de vie de l’éleveur laitier (aide pour mener les entretiens, s’il faut rebondir sur les questions au fur et à mesure que l’éleveur expose son parcours).

GUIDE D'ENTRETIEN

A. PRÉSENTATION DE L'EXPLOITATION ET PARCOURS

1. Pourriez- vous me parler de votre **parcours** ?
Pouvez-vous présenter votre ferme ?
Êtes-vous seul sur l'exploitation ?
Ça fait longtemps que vous êtes agriculteur ?
Est-ce que vous avez repris l'exploitation de vos parents ?
Pouvez- vous m'expliquer l'évolution de votre ferme depuis les années 2000 ?
Comment expliqueriez-vous votre mode d'exploitation ?
2. Qu'est-ce qui vous a amené dans cette **orientation actuelle** ?
Est-ce que vous avez changé l'orientation de l'exploitation à la reprise ?

B. GESTION, INTENTION

3. Quelle est, pour vous, la manière idéale de **gestion d'une exploitation** comme la vôtre ? Quand il y a une **décision à prendre** quant au fonctionnement de celle-ci, comment vous-y prenez-vous ?
Avez-vous l'habitude de demander conseil à votre entourage ?
Prenez-vous contact avec des personnes externes à la ferme si vous vous posez des questions ? Comment font les autres éleveurs que vous connaissez ?

Quels sont les freins qui vous-empêche de mettre en place votre idéal de ferme ?

SI EN COUPLE : Pensez-vous que votre gestion serait différente si votre compagnon/compagne n'était pas là ?

SI FEMME : Pensez-vous que vous avez une gestion différente d'un homme ?

4. Est-ce que vos **collègues/voisins** gèrent leur exploitation de la même manière que la vôtre ?

*Pourriez-vous décrire tous les **différents types d'agriculteurs** que vous connaissez dans votre région ?*

5. Selon vous, comment un éleveur doit réagir en cas de **chute des prix du lait** ?

Les autres éleveurs que vous connaissez, réagissent-ils de la même manière ?

C. VISION DE SOI, IDENTITE

6. Être éleveur laitier, c'est quoi pour vous ?

*Comment pourriez-vous **vous définir** ?*

7. Quelle importance donnez-vous au fait de produire spécifiquement du **lait** ?

D. INFLUENCES, CONTACTS

8. Quelles sont les gens avec qui vous interagissez, que vous **rencontrez** dans votre métier ?

*Est-ce-que quelqu'un vous aide pour la comptabilité ?
Avez-vous un conseiller en particulier ?*

*Êtes-vous régulièrement en contact avec d'autres acteurs de la filière ?
Faites-vous partie de groupe d'échange, de coopératives, etc. ?*

E. AVENIR

9. Dans les années à venir, **quels projets** avez-vous pour votre exploitation ?
10. Comment voyez-vous **l'avenir** du secteur ?
11. Si vos enfants/les générations futures devaient assurer la relève de votre exploitation, que **leur recommanderiez-vous** ?

Liste des acteurs :

FWA	Joskin	Coferm
FUGEA	Bouwmatic	Biomelk
MIG	De Laval	Comité du lait
SCAR	Lely	Apaq-W
SCAM	AWE	Diversiferm
Wal-Agri	Laiterie des Ardennes	Réseau Aliment-Terre Verviers
Quartes	Socabel	Nature et Progrès
Crelan	Milcobel	Oxfam
CBC	Arla	Fourrage-Mieux
Fortis		

Annex 5 – Interview guide related to chapter 5 parts 2 and 3

Agra-Ost

PreventAgri

Agricall

Finagri

Services agricoles
provinciaux

CRA-W

FJA

DGO3 – services
publics wallon

AFSCA

ARSIA

Natagora

Collège des
producteurs

Votre vétérinaire

Vos voisins directs

Les membres de
votre CETA/Comice

SOCOPRO

+

Le sillon belge

Le plein champ

La lettre paysanne

