MAST hanke
Danish Dairy farms` development from 1990 to 2017 - learning points to successful development in North Savo

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Disclaimer:
The basis for the content of this report is author's experience as an agricultural chief advisor in Denmark, during a period where the dairy farms expanded and invested heavily in growth.
The project group of MAST has submitted the task. The assignment serves only for the purpose to answer their questions. The author does not assume responsibility for the material's accuracy or for dispositions made on basis of the information or assessments.
Preface
This report is a part of the MAST project. The MAST objective is to "Systematic enhancement of dairy economy and primary production in North Savo". The project management is in charge of ProAgria North Savo.

This report is the project groups wish to look to another country for information and inspiration about what to be aware of when dairy herd size grow and to get inspiration to further enhancement and develop cooperation among actors in the dairy sector in North Savo that support dairy farming.

The project group chose Denmark to look for inspiration.

The basis for the report is the authors experience and interview of actors in dairy industry, in the period with tremendous investments and fast growing dairy herd size in Denmark since 1990. The report strives to answer the questions from the project group MAST, and from people interviewed, during the process of writing this report. The report will present what the Danish farmers and advisory system has experienced during the period of expansion and the need for farm advice and support. The report describes a few organizational adjustments. Documentation is reports, papers, web pages, wherever possible, supplemented the author’s comments. If there is no official English title for Danish reports the author have indicated an English title. The report present some of the tools and services from the Danish advisory system, to support growing farms.

The report is based on the authors own experience as a chief advisor in the Danish farmers advisory system since 1987.

The report strives to answer questions by addressing the subjects of: the future, strategy, expansion, acquisition of land, leadership, management, financial stakeholders, education and learning and organizations around the farmer. Finally, the report will propose subjects for further discussion and reflection about activities to initiate.

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1 Introduction

The purpose of this report in the MAST project is collect information about how to grow herd size successfully.

Milk production in Pohjois-Savo is facing big structural changes in the next 10 years. According to a survey (ProAgria 2016), more than 20% of the producers expect to quit production within the next 5 years. A part of the current producers plan to expand their farm within the next 5 to 10 years.

The question is if the expansion can outweigh the decline in production, due to the dairy farmers who are leaving dairy production. It is possible and a risk that the net result will be a falling production in Pohjois-Savo.

It calls for action to keep the level of production in the future in the region. The milk sector plays a significant role and have a significant influence on the livelihood of the society, and in maintaining the biological biodiversity, in the milk belt of Finland.

Investments and expansion of the production on the farms also means change in the need for service and advice. The advisory system will have to adapt to the new situation.

Both the farmers and the advisory system will face many new challenges when the majority part of the cows shift from tied up barns to loose housing production system. The average herd size will undoubtedly be doubled or maybe tripled from the current situation of 40 cows in average.

It will be a cultural shift in management and leadership of the dairy farms and put the whole milk sector under pressure, both physical and psychological.

To be competitive in the future, the farmers will have to comply with increasing demand from the society, local and national, and international stakeholders, for more sustainable and secure production. Open market, international trade and increasing transparency will mean increased competition in the milk sector worldwide. To stay competitive will require help and use of new technology to handle future challenges and to improve efficiency and effectiveness in food production. Precision Livestock Farming (PFL) will be the new source.

ProAgria Pohjois-Savo, MTK, Savonia University of Applied Sciences and Luonnonvarakeskus Luke Maaninka wants to put focus on the need for support, service and advice to the farmers who expand. They want to know more about what activities they can initiate for the farmers before, under and after the expansion. To get ideas and inspiration for future activities they wanted learn from the Danish process of expanding dairy farm size. As working title, they named the outlook “Benchmark Denmark”.

1.1 Denmark compared to Finland

The Danish dairy sector has been through a tremendous investment and development during the last 30 years. A research report published by MTT describes the Danish dairy chain to have the highest total factor productivity (TFP) among the Northern Europe dairy chains (Jansik et al. 2014). The average herd size in Denmark in 2017 is 197 cows, up from 34 cows in average in 1990. In the same period, the dairy production system has changed from tied up to loose housing system. The education of farmers has improved dramatically from educating professional farm managers to including education of professional farm business leaders.
Figure 1 to 5 illustrates how the Danish and Finnish number of herds, herd size, cow population and milk production have developed, since 1990.

**Fig 1. Total number of dairy cows 1990 to 2016 (1000).** (Ref. Statistics Finland (2017) and Danmarks Statistik (2017)).

There were 264 thousand more dairy cows in Denmark then in Finland in 1990. In 2016, the different is 266 thousand. The development in number of dairy cows in Finland and Denmark has had the same pace since 1990. In 2016, there were 282 thousand dairy cows in Finland and 548 thousand cows in Denmark.

**Fig 2. Number of herds from 1990 to 2016 (1000).** (Ref. Statistics Finland (2017) and Danmarks Statistik (2017)).

In 2016, there are 7574 dairy herds in Finland and 3160 in Denmark. In 1990 there were 23489 (94 %) more dairy farms in Finland than in Denmark. In 2016 there were 4.414 (71%) more herds in Finland than in Denmark. The figure shows that Finland has had a faster decrease in dairy herds. The speed of decrease in number of herds has leveled off in Denmark since 2008, but not in Finland. It indicates that Finland still will see a bigger relative reduction in numbers of herds than in Denmark.

**Fig 3: Total milk delivery 1990-2016 (bio. l).** (Ref. Statistics Finland (2017) and Danmarks Statistik (2017)).

Finland has had a steady milk delivery from dairy farms since 1991 around 2.3 bio. l. In the period from 1990 to around 2008, the Danish farmers delivered around 4.4 bio. l. Since then there has been a slightly growth. They delivered app 5.3 bio. l. in 2016.
In 1990 the average Danish herds were around 3 times bigger (34 cows/herd) than the Finnish herds (11 cows/herd). In 2016 the average Danish herds was nearly 5 times bigger (173 cows/herd) than the Finnish herds (37 cows/herd). In milkrecording the average herdsise in Denmark now in 2017 is 187 cows/herd.

In 1992 the average Danish herd size was the same as the average herd size in Finland in 2016 (37 cows/herd). The fast development in Denmark in mid 90th was analyzes showing long time general depreciation of the dairy farms, change of quota system, a need for changing production system and financing made possible by falling interest rate.

In 1990 the average delivery of milk from herds in Finland was 57 thousand liters and in Denmark 200 thousand liters (2.5 timers more). In 2016 the average delivery of milk from Finnish herds was 306 thousand liters and in Denmark 1.643 mio liters (5.4 times more). The deliverery pr farm increased rapidly since 2002 in Denmark.
2. The Future
To know where you are going you need to have an idea about what the future is likely to bring to you. You have to find a “good place” to look into the future.

2.1 Characteristics of the farmer.
What characterizes the persons who own and run future farms? Is he/she a peasant, farmer, producer, businessperson or director? It seems without no doubt, that with the growing size of the herds, the farmer’s role change from being peasant/farmer, farm manager to be more businessperson or even director. They will be better educated in business thinking with less focus on subsidies. They will get and collect information they need from many different sources from all over the world.

The need for service and advice will depend on the type and position the person hold in the farm business. Some of them will be lead users, who will be in front of everything and want to use new trends and inventions to change or create new business. They are business developers and use a differentiation strategy. Others will practice production from more than one farm, and still there will be the well-known family farmers for whom farming is a lifestyle more than a straight business.

Lead users are valuable customers and potential customers who can contribute to identification of future opportunities and evaluation of emerging concepts. Understanding these users can provide richness of information relatively efficiently.

Eric von Hippel introduced the concept of ‘Lead Users’ in mid-80th (Von Hippel 1986). He defined the lead user as those users who display the following two characteristics:

- They face the needs that will be general in the market place, but face them months or years before the bulk of that marketplace encounters them
- Lead users are a position where they, by getting a solution to their need, benefits significantly.

Lead users are a good example of a creative consumer.

Lead users see need that will be general in a marketplace (e.g. advisory service) long time before the majority of that market meets them (e.g. farmers or advisors).

It takes time and effort to identify lead users. Some of the universal attributes to look for include (Ishmael 2014):

- Experience within the category of interest
- Level of motivation to see the category’s unmet needs addressed
- History of attempting to proactively solve unmet needs
- Frequency of developing solutions
- Overall degree of willingness to share perceptions and opinions about unmet needs

2.2 Farm systems
We will see fully integrated farming systems, where the enterprise handle everything by themselves. We will see more or less cooperation between farmers. The different practices of cooperation in the future will vary considerably. It will range from cooperation about few processes, like silage production or cooperation and sharing employees to farmers who are cooperating about everything on the farm like cooperative barns.
2.3 Future prospects.
In spite of the many different ways to practice farming they all need to have an outlook and follow both local and global development. It means there is a need for an information service, which creates forecast and disseminates the results about trends the dairy farmers can use for their decision.

Senior consultant Henning Otte Hansen from the Department of Food and Resource Economy University of Copenhagen (IFRO) has in a lecture for agricultural consultants summarized drivers that influence agriculture national and international, and what the Danish farmers have to take in consideration (Hansen, 2015).

a. The structural development will continue linearly.
b. Exchange ratio has a clear tendency – it is falling.
c. The “agricultural treadmill” means that farmers who are not adopting new technology will be under pressure of falling prices. That is why there is a need for strategic planning and development of farms.
d. Globalization. Danish farmers have to harvest the benefits of globalization because they export a major part of the production.
e. Danish farmers have to be ready for change.

The agenda and conditions are changing for maintaining milk production, economy and livelihood in the countryside and for the farming sector. Finland is part of EU. Finland is exporting agricultural products. It means that the Finnish farmers face open marked and the same challenges as the Danish farmers do in the future. No one can exist on an isolated island unaffected of what happens in the surrounding world.

Technology used in agricultural production will bring new possibilities. The term Precision Livestock Farming (PFL) will further strength the productivity and efficiency of farming. PLF means BIG DATA. The farming sector possess many data to that is useful in the future. There is a need for PFL to keep up with the relative constant falling commodity prizes. In other words, the farming sector will continue sharing the increase in productivity with the consumers in term of relative lover prices on commodities from the farm business.

2.4 Megatrends and scenario
SEGES finished a project called “Sæt omverdensanalysen i spil” (Put outside world analysis in play (the author’s translation)) in 2015 (Skov 2015). The aim was to support the strategy process for farmers by having focus on megatrends.

Megatrends are trends that several people believe are important predictions about the future. Megatrends influence the way the society politically, economically and technologically is structured. It is not possible to say anything about how they will directly influence the individual farm business in the future. It is important to be aware of the trends and published forecasts. An example of megatrends is awareness of climate changes or consumer trends consuming more food that is organic or raising awareness of animal welfare. How will that influence the conditions for farming, for example in Finland? What do the farmer have to be aware of when planning future development of the farm and at the same time comply with future wishes, regulations and still be competitive.

Some of the megatrends that will influence the agriculture and the need for service and advice are/could be:

• Globalization. The world is getting smaller. Increased flow of people, capital, goods, services, information and technology across national borders. It means e.x. lower trade barriers, increased
competition about knowledge, the demand for skills and competences among knowledge workers will be cross border.

- **The demographic development.** Regional, national and international. Expected increase in the world population. Increase in the middleclass income, general older average population, increasing focus on health. Consequence will be increasing demand for food in general as well as milk and milk products.
- **Increasing influence from Asia.** The Asian population expect to dominate the world population in 2050. It means migration of eating habits and demand for food commodities, food security and food functionality.
- **Health.** With increased wealth, the demand for healthy food will increase. Lifestyle diseases demand healthier food products, ex milk produced on farm with specific characteristics.
- **Technology.** New technologies will change the way people live and work, redistribute capital resources and create new products and services. Examples are biotechnology, robots and process technology, DNA technology.
- **Environment.** Consumer wants sustainable agriculture compared to nature, environment and social issues. Water seems to be a scarce resource in the future. Food production and processing have to be in compliance with these wishes. Production of bioenergy will be demanded in the process. Agricultural production will be in closed circuit, which produce and sell food products with a high environmental profile.

Scenario analysis can also support thematic issues such as early warning, risk analyses and uncover possibilities on the farm.

To work with and being aware of megatrends and future scenarios, have major influence working with expansion of the farm. The reasons is:

- The demand for environment friendly production increase
- Layout of the production facility to perform effective and efficient production is crucial
- Recruitment of employee with the needed capabilities gets more difficult
- Continuation of “the license to farm” given by the society is a must in the future

2.5 Consequence for advisory service.

The advisory system risks losing the farmers as customers, if it is not able to support the farmer in the process of changing the production system.

It means that the farmers, the farming system, the services and needed advice are up for constantly changes to fulfill the future requirements. The clock frequency of change is increasing. It’s the reason for the farmers to have an agile strategy.

2.6 Forecast of farmers need for advisory support

In 2008 Knowledge Center for Agriculture, Department of Cattle - now SEGES - analyzed the future demand among big dairy farms to run the farm. The aim was to get closer to the famers need for service and support to run their business, when they are growing in size. Fifteen farmers across Denmark participated in a qualitative interview.

A summary of the findings are:

- Enhance and develop methods for monitoring that support the dairy farmer to distribute areas of responsibility, among the employees. Evaluation of the employees have to on results achieved.
- Establish a concept for coaching and sparring partner for farmers.
• Offer Human Resource development and connected tools for management of employee.
• Disseminate and encourage dairy farmers to use concepts and tools available, like Cattle-Key, Business check, KvikKoen - an app for registration - and mobile leadership information.
• Enhance the profile of Danish Cattle Federation through improved visibility and recognisability as a competent source for knowledge and information (a trade mark).
• Offer the cattle sector more intensive information about the development of framework conditions (environmental, animal welfare, habitat protection and other relevant legislation)
• Increase integration of the transversal profession as a strength in The Danish Agricultural Advisory Service (DLBR), as a resource in the fight for market share.

The interviews showed what the dairy farmers, who have grown their business dramatically to become some of the biggest farmers in Denmark, see as the most important things they need in the future to lead and manage their business.

Some of those farmers are also lead-users. They are first movers to utilize new technological possibilities, and to take the advantage of PFL. They see new trends and developments up front. Lead users are a valuable source for the advisory system and worthwhile to follow closely and get them involved in the development of future services to farmers.
3. Strategy as the basis for decision.
Vision, mission, action and implementation. Where are we going?

“Have ambitions and energy. Wanted structure, coherence and work plan”

A farmer’s expressed wishes to his advisor.

Danish advisors early saw the need to have a strategy, as a necessary basis for decision, when the farmers want to expand the farm size. That’s the reason why a strategy advisory service was developed and offered.

Decision to expand, renovate or make bigger investments takes time. The time from idea to full line production in new facilities easily takes between 2 to 6 years, to do it properly. It is crucial for having an economical successful expansion that the basic for the decision is well prepared and based on the latest available knowledge and experience.

3.1 Development of a farm strategy.
The basis for every expansion of a farm is the overall strategy for the farm. Some farmers have it in their thoughts. It’s not enough it has to be a written strategy. Strategy work have be kept simple and it is quite simple. Strategy is not something you work on every day, as a farmer. It belongs to the discipline leadership. It’s one of the reason why the vocabulary, insight and content of a strategy process, feels unfamiliarly and odd to for many farmers.

Many farmers haven’t been exposed to the discipline of making a strategy, during their education and lifetime. New generation of farmers in Denmark, have the possibility to learn and exercise strategy development and thinking during their education. The pressure on the farmers to have a developed strategy is increasing. It has become even more difficult to get investment funded without been able to present a written strategy and proper business plan for the enterprise.

It’s important that it is the farmer himself who take the initiative to develop a strategy for his business, and not to be forced to do it by other stakeholders, like lenders. A clear and consistent strategy helps the farmer to tell the stakeholders, where he wants to go. It create trustworthiness, confidence and comfort among the stakeholders - funders, society, employee, neighbors, suppliers and buyers - about who he is, as the person behind the farm. It is good for the stakeholders to know, what is inside the head of the farmer. For the farmer himself, a clear strategy provides peace, peace of mind and direction, in the everyday work, in a turbulent world.

In Denmark, the need for strategy advice has grown fast the last 20 years. Partly explained by the growing turnover on each farm. It’s a result of the expansion of the farms and lately by the financial crises, falling prices and increasing fluctuation of commodity prices.

3.2 Growing fast – consequences the Danes learned.
From late 90th to today the Danes learned, that the development could go too fast and can create many obstacles further on (Rasmussen & Dalgaard 2002). Especially if the expansion wasn’t based upon a holistic view of the farm in the short and long run and a proper well-developed strategy.

A strategy must be informative about the current situation on the farm and agile. Many tools are developed and thought at business schools and universities e.x. SWOT, PEST, GAP analyses, scenario
analyzes and so on, that supports the strategy planning process. The Danish advisors saw a need for a strategy process that was less complicated, agile and easy to understand and more present for the farmers. It led to development of the advisory tool and strategy process called “Dynamic Strategy” (Schar 2014).

3.3 Dynamic strategy.
Dynamic Strategy is a simple strategy process, easy to understand, agile and easy to approach (Schar 2014). It is a simple set-up with possibilities for adjustments and focus on selected part of the overall strategy and an action plans.

Dynamic Strategy uses visualization, in the process. It’s easy to adjust, when the conditions for farming change. The visual product makes it easy to communicate to stakeholders, and it supports implementation of the strategy.

The process is a set of meetings between the owner of the farm and consultant. Basis is the following four meetings:

First meeting. Introduction to the strategy process, description of the business, SWOT analyzes, potentials and challenges, introduction to the next steps and appointment about next meeting.

Second meeting. Key-figures understanding and use. What does the key-figures tell about the future for the business? The outside-world’s requirement transformed to action in the business. Action required on basis of your own key-figures and prepare for next strategy meeting.

Third meeting. Review of material. Formulation of a vision – final. From vision to tactic goal. From tactic goals to actions. Agreement how to follow up and introduction to next meeting


It’s is outmost important that every strategy process achieve clear goals and actions for subjects that the farmer can influence.
Expansion of production facilities is one of the biggest and most serious decisions as professional farmer. Many farmers only once in a lifetime will experience of startup of new barn or expanding the barn. In the future, we will see farmers investing in development of herd size more than once in there active lifetime. Expansion is not only about getting a larger herd or farm, the so-called “external growth”. It’s also about the business entrepreneurs’ personal growth, called the “internal growth”, which means psychological and mental as a leader.

4.1 Phases of expansion.
Farmers are searching for advice and recommendation about how to expand. A structure about how to do it. A successful start of the production is serious for the whole project. It is serious, because failure means lost productivity and economy, which will have long-term overall influence on the farm business.

Expanding a dairy farm have several steps. The process is often complicated with many points of decisions and last long. The physical layout of the farm is important, to achieve proper management, working and production efficiency, as well as are the importance of the management skills.

The Knowledge Center for Agriculture (now SEGES), did run a project called “Konkurrence og bæredygtig byggeri” (“Competitive and sustainable construction”) (the authors translation), from 2011 to 2013. The purpose was to follow a group of farmers, who planned to expand their herd. It was also the purpose to develop tools to support the process, as being the builder. The results were published in 2013, 28 years after the start of the building boom in 1995 (Nielsen 2013).

The report structured the building and expansion in ten sub topics. The contents of the sub topics are:

1. **Startup.** This phase start by asking - what is it we want? It’s also called strategy. Other subjects are matching of expectations between advisor and the builder. The builders’ memo list is a list of subjects to be aware of during planning expansion. Evaluation of the project economy. Talk to the lenders and environmental check.
4. **Sketch.** Decor and operation, first visit of a building advisor, first sketch, workflows and functional descriptions.
5. **Occupational health and safety.** Barn layout. Handling and treatment of animals. Fixtures and technical equipment and décor. Staff facilities.
6. **Economy.** Profitability analysis and financing.
7. **Between sketch and project.** Agreement about advice.
8. **Start-up of the design phase.** Fire codes. Building requirements and selection of material. The surrounding facilities. Basis for standard offers of equipment – inventory milking and machinery. Operating and maintenance schedules. Maintenance on inventory and barn technology.
10. **Construction phase.** Kick of meeting and schedule, construction support and supervision.
11. **Start-up of cattle barn.** Starts 2 to 3 month before the construction is finished. Planning the commissioning process. Provisioning and control of barn and technique.
The list illustrates the complexity of an expansion process, and how many different professions, there are involved. It is important to highlight that in every step of an expansion planning and constructions process there has to be a proper risk evaluation with alternatives.

Because of this complexity, the farmers have need for overall advisory support. It is important that the advisors are able to support farmers during this long process, by submitting relevant coherent and comprehensive advisory service.

A comprehensive report with recommendation for housing design for cattle is published in Denmark. The 2001 version is to find in an English version (Anonymous 2001).

4.2 Start of new facilities.
This phase can be illustrated as a gradually shift from commissioning of the new facilities to new daily management routines are implemented and satisfactory working (Fig 6). Commissioning is a process by which an equipment, facility, or plant (which is installed, or is complete or near completion) is tested to verify if it functions according to its design objectives or specifications.

There are many pitfalls to avoid in this phase.

\[\text{Commissioning} \quad \text{Start up} \quad \text{New management procedures}\]

*Fig 6: The gradually transition from commissioning new facilities to new management routines.*

This phase also consists of practically preparations like recruitment of heifers, expansion of the herd (how many and when), preparation of the animals before introduction to new facility, getting used to work with new inventory and new working routine. Especially those who expand the herd, and at the same time change system from tied up to loose housing system, faces extra new challenges. There is new feeding practice (animals divided into feeding groups, manage TMR mixture and feeding e.g.) and the animals who have to adapt to loose housing system with new milking routines.

At the same time, it is important to be aware of the planning for the farm as a whole. It means the field and feed production, budgeting for production and economy.

Advice, recommendations and support how to plan the whole commissioning phase and support during the commissioning phase, is one of the learning points from Denmark.

Well-developed advisory service can raise awareness of this phase and reduce the economy loos during the start-up phase. It can ease the enormous mental and psychological burden on the farmer and improve welfare.

4.3 Recommendation for handling commissioning
The Danish advisory services published recommendations about how to handle commissioning (Dalgaard 2000).
The commissioning guide deals with subjects such as - herd expansion, preparation of herd, management, preparation and control of the stable, how to start using the barn, feeding in the introductory period and new daily management routines.

Later a survey about the farmer’s in practice build and commissioned a new barn was published (Rasmussen & Dalgaard 2002). In total 257 farmers, who have expanded and build a new barn within last 3 year, participated in the survey, about their practice and experience.

The survey showed that there were found failures and missing points in 2/3 of the cow barns. Artisan’s haven’t finished the work in the barn before introduction of the animals to the barn, on half of the farms. It created disturbance, nervous animals and loss of production.

Only 50 % of the herds hoof trimmed the cows before exposing to new barn. In average, eight cows per herd, 6 % of the cows, were culled before, under and after commissioning.

Based on Danish experience, it turns out that the importance of the start-up phase is of overriding significance and often not well planned and prepared.

4.4 Support to farmers that expand.
There is a need for advisory support, not only for the planning and drawing the new barn, but also about commissioning and implementing new management routines, to prevent huge economic loss and management troubles.

How to do it? There are several ways to do it. A “mentor” service or specialist advisory service that takes obligation to guide the farmers through all the phases, in a structured scheduled way. It could be the role of a specialized business development advisor. Another option is to establish of a temporary farm board, with members who have experience in construction and expanding business facilities. The role of a temporary farm board is to support the leadership of the farmer, in the expansion process. The responsibility could also, be delegated to a hired specialist.

4.5 Working too much during expansion process.
Farmers who built new barns tend to have an experience of over estimation of their own resources and working capacity. It is important, in the early phase of the planning process, to estimate the expected workload during the period of building. Make realistic decision on how much the farmer himself is able to participate in the work. It is important that the existing production and daily management of the herd have full focus during expansion. Danish experience shows, what the farmer think he saved by participating in the construction, is lost several time, not having enough focus on the existing herd and production. The consequence is loss of production and economy. It is possible to avoid the loss in economy and production. Hiring extra employees to take care of management of the herd or to participate the construction of the new facilities comes with a cost but easily pay off by reduced loss production and hereby economy.

4.5 Recommendations from farmers having experienced expansion.
Danish farmers experience and recommendations from been through an expansion are collected and disseminated, to inspire their colleges, who plan to expand (Dalgaard 2011). Below is a list a list of some of their experiences and recommendations:

- a. Clarify the wish to the future (strategy)
- b. Visit many other barns before you make final decision
- c. Read “FarmTest” publications about building barns
- d. Imagine the double production – dream it!
e. Do the planning work thoroughly. Finish the planning completely before start building. It is expensive to make changes during construction.

f. Draw sketches yourself, use building advisors and different sparring partner

g. Have a dialog with authorities about environmental approval

h. It takes time to find the right building décor, especially new types of farm section

i. Use new technology – but be critical when evaluating if it will work in your construction

j. Create good facilities for the staff. It spoils the staff but benefit production.

k. Describe all details carefully

l. It’s time consuming to build

m. Agree on a date for the construction to be finished

n. Contracts have to be discussed open and honest

o. A fixed price on the building gives peace

p. Choose craftsmen/ construction company you trust

q. Craftsmen on the site must be able to and have the will to work together

r. You must have the desire to construction management, otherwise let other do it

s. If you yourself is the construction manager, then you need others to take care of the herd

t. If you can’t avoid expanding without buying animals, then get them from as few herds as possible.

u. Hire extra staff to commissioning

v. The barn has to be 100 % finished before starting milking.

4.6 Finnish farm expansion - advisory group.

In Finland, the activities around farmers who plan to and expand their farm seem to be scattered and not coherent. There are different actors offering service in the different part of the expansion phase. It could be a benefit for the Finish farmers to enhance the cooperation between the different actors. It could be a “farm development advisory group”.

5. Acquisition of a farm and land re-parcelling.

Something like 3000, farmers are ready to hand over the ownership to new farmers in Denmark. It is difficult for other, especially young farmers, to take over a farm. The problem is funding. It is especially a problem for young people to collect enough equity to acquire a farm. The traditional lenders who fund the last part of the loan, the banks, have been more reluctant.

Banks have introduced more strict evaluation of the person that wants to start farm business. This evaluation includes leadership skills, performance in former positions as farm employee, good recommendations (CV) and good references, personal competences, relevant education and demand for self-financing.

5.1 Alternatives for transfer of ownership

This situation calls for other, more creative and alternative ways to finance takeover of farms compared to the traditional way.

This can also be relevant for the Finnish farmers. The Finnish farmer seems be stocked with few alternatives for funding farming activities.

Some of the “alternative” models, we now see in Denmark is following:

- **Transfer of a farm** into minor operative company (ltd, I/S, partnerships) where the ownership is distributed between partners (owner and employee). It gives the new producers a possibility to start as part owner and sharing results with other and to build equity.

- **Earn out**. It’s a methodology where the last part of the price for taken over the farm depends on how well the performance of the business is going in a certain future period. The seller gets a provision, in an agreed future period if the business achieved certain goals.

- **Share farming like share milking**. It’s a well-known principle widely practiced in New Zealand. This concept makes it possible for new farmer aspirants to gradually own and build up the ownership to a dairy farm over time. There are several levels in the share-milking model (fig 7). It’s now practiced in Denmark (Brandt 2015)

- **Professional investors** such as pension’s funds, private companies, private investors or other funds bye agriculture land and productions facility and lease it to farmers.

- **Different types of partnership** is introduced by the organic producers organization in Denmark (Organic Denmark 2016)

Fig 7 illustrates the New Zealand share milking system in brief to gradually transfer ownership to a dairy farm.
5.2 Matching buyer and seller

Matching buyer and seller is a future challenge, because there will be an increasing number of people who want to farm, without having a family background in farming. The advisory system has an important role to support both the seller and the buyer. It has shown to be a subject for the Danish advisory system. They are matching buyer and seller. It’s done for e.g. by creating subsidiary companies owned by the local advisory centers e.g. “LandboGruppen” (Landbogruppen 2017)

It’s not only a question about transfer of a farm to a farmer. It is also a question about willingness to transfer production facilities and land, on conditions so that it can be a success for the new owner as well. It is about creating a win-win situation.

5.3 Encourage to lease property

Finland seems to have a situation where farmers are reluctant to entrust the use of production facility and agricultural land, when they stop using it themselves. If the owners stops investing in the farms and use the fields for agricultural production, while waiting for some to take over - maybe the family member - the depreciation of the farm goes fast. It is a serious problem for the farmers who is continuing production and who need fields to improve their production. It also a problem for the landowners because the value of the land will be falling by not kept in good farming practice. Changing the subsidy system would be effective. That is not a motivating and win-win situation.

It’s necessary to find other motivating factors e.g. appealing to the landowners to keep their land in production for the benefit of the farming sector. It could be a campaign, a joined effort, of the farmers union, regional official and ministry of agriculture. They could effectively use commercials, promotion in farmer’s magazines and other information sources that reach the target group.
5.4 Land reparcelling

Reparcelling is when a number of plots of land within a certain geographic area exchange ownership at the same time. The exchange is a combination of buy and sale of land (Jensen & Eide 2017).

The purpose is to get the plots of land situated more desirably and thus to achieve a better agricultural utilization and effectiveness.

Finland is a land dominated by forest. The consequence is that many of the fields are scattered around in the landscape with relative small size and long distance to the dairy farm. With the current structure and expected development, this challenge will grow even bigger. There is a need for redistribution of ownership to land and collect agricultural land in bigger parcels closer to the farms. It’s not an easy process but necessary. It involves willingness among the landowners. It is both a cultural challenges and challenges of mindset.

For centuries, Danish farmers practiced reparcelling. Is has shown to be important to increase productivity and efficiency in the production. It benefit both the farming sector and the society, for example by reduced traffic on public roads. Reparcelling is challenging and takes time. It is important to be motivated and create win-win situations. The Danish State encouraged the farmers to do it and support the process.

In Finland the farmers organization, advisory system and the public could promote land reparcelling through information, announcement and meetings. It’s important that the farmer’s organization and advisory system is proactive in this case.

Mattsson (2006) compiled a comprehensive view of the registration of landownership, transfer of land and right to use the land in the Nordic Countries.
6 Leadership
Leadership and management are two different disciplines. Management can be taught, unlike leadership. Management is more a personal skill. Leadership is more an interpersonal skill. Many small and medium size enterprise, like farm entrepreneurs, struggle with the discipline leadership.

6.1 Leadership is!
Fig 8 illustrates some of the characteristic differences of management and leadership.

Figure 8: Leadership and management two different tasks.

Many people quickly assumes that being a good manager also means you are a good leader and vice versa. The two concepts are actually quite distinct. Understanding the different helps to understand what it takes to be good a good leader or a good manager.

Leadership belongs to the strategic and tactic level of business. It involves creation of a clear vision and mission, sharing that vision with others so they will follow willingly. It’s also about providing the information knowledge and methods to realize that vision and providing the necessary resources. It is important that a leader coordinate and balance risk and conflicting interests of all members and stakeholders.

A leader steps up in times of crisis, and is able to think and act creatively in difficult situations. Especially in years where the conditions, marked and new megatrends create a feeling of crises and uncertainty in the farming sector.

6.2 Leaders and market information
All leaders of a business need information about the development in the surrounding world. That’s why they need market information about input and output commodities.

In Denmark, local advisors deliver market information together with SEGES. Surveillance of marked and commodities are disseminated through a web-based service called AgroMarkets (Anonym 2017.1).

AgroMarkets presents market trends for commodities, results of analyses done by other institutions and industry, forecast, in depth articles, financial analysis and risk assessments. They also offer curses in ex trading.

Another local advisory center has created something like the same called Agrocura, (Anonym 2017.2).
6.3 Leadership is hard mental work

Many farmers, who grow their business find it a daunting uncomfortable challenge, and for some, mental and psychological stressing, when the growth of the business requires more leadership. It is mainly because a majority part of their working hours have been, and still are, focused and concentrated on daily management of the farm. To learn to delegate responsibility and obligations becomes important to get time for more leadership.

The best way to learn leadership and to understand it is during education and practicing it as a farmer. A good way is to practice leadership as employed leader, for example on a bigger farm or in other business, before the farmer acquire a farm of his own.

During the big expansion period of the Danish dairy farms since 1997, the advisory system experienced an increasing need for leadership support, training and knowledge. The advisory system developed and offered courses, discussion groups and leadership service and intensified the dissemination of knowledge leadership to farmers. The following describe some of the methodologies subjects.

6.3.1 VIP discussion groups

Success is always a very strong motivator and especially for farmers who expand. Entrepreneurs and developers get energy by the experience of growing the business. Experience can be achieved by attending discussion groups about leadership, strategy and economy (VIP-groups), together with other people who are successful businesspeople. VIP groups need a facilitator connected to the group to be successful. An obviously possibility for an advisory organization to offer that service.

6.3.3 Mentoring

To be a successful leader you have to expose your own practice tor other leaders. They can give you support and suggestions how to do it. They can help you to understand and see how your practice influence other people, stakeholders and the employees.

Danish farmers have possibility to get a mentor. Farmers who feel the need to have a sparring partner, a mentor, can get contact to another farmer who has been successful and trained as a mentor. The advisory system organize the contact and offers training to mentors. Stakeholders like finance institutes also use mentoring by using farmers to support their farmer clients, who they are concerned about performance.

6.3.4 Leading other people

"It’s the people who makes the different“.

Especially leading other people to achieve a certain goal have been a big challenge for expanding farmers. They need knowledge, training, courses and advisory service about people management.

When growing farm size the farmer becomes extremely dependent on people to work with him. It have been a challenge for the Danish farmers. They had to learn how to manage people and to perform through other people. It is an extra challenge when employees are foreigners. Handling foreign workers is both a cultural and language challenge.

Respectful structured information and guiding foreign workers, with visible benefits for them, is important.

To know when a job is satisfactory performed, when a production result is good and when expectations have been achieved, is important for all employee. In other words, the employee need to know the objective of the task they are doing. To praise the employee for their result is a strong motivator and create acknowledgment.
The demand for advice to handle people management topics include topics like: formulate and write a vacancy, recruiting the right people with the right skills, write a contract with rights and obligations, legal subjects, organization of the workforce, employee interviews and dismissal of an employee.

Tools to handle HR- subjects have to simple. Use the principles of LEAN and regular meetings like white board meetings, create trustworthiness and comfort among people. Use SOP to show and maintain good repeated working routines.

It is not something a leader just do. Most need support to do this. The Danish advisory system support that to the farmers. Interview in connection to this report indicate that Finish dairy farmers is looking for such service.

6.5 Leadership style.
As human act and react different in different situations. As leader to be aware of your preferred style of reaction is impotent to be aware of when you are depended of other people to deliver.

In Denmark, we recognized early in the 90th that farmers, who expanded and became dependent on employees, had to be aware of the leadership style. There are many different tools to elucidate that, on the market. DISC- profile is one of them and have a long history of development. First publication of DISC-profile was in 1994. It can be useful to increase self-awareness in a setting where an individual could use the insights in their interactions with others. This self-scored and self-interpreted assessment, today known as DISC. Test results are presented graphically in a visible circle that is intuitively and memorably, together with a description. The types is Dominance (D), Influence (I), Steadiness (S), and Conscientiousness (C) (Cole and Tuzinski 2003)

Figure 9: DISC profiles (Cole and Tuzinski 2003)

As a consultant’s, who advice the future bigger farmers, it is important to be aware of the different leadership styles the farmers practice. Advisors in Denmark have been educated and trained to handle this subject by offering HR- service including evaluation of leadership style. There are consultants who are certified practitioners of the DISC methodology, employed in DLBR.

6.6 Organizing the farm and HR
When the farm size grows, and with several people employed to run the farm business, it is necessary for the farmer to create a structured organization, share responsibilities, obligations, task and goals. An organization model helps employee to see the business as a hole and to understand where they are going to deliver results and how their performance is dependent others performance and vice versa.

Figure 9 illustrates a classic organization model.

When the farms grows bigger and organized with straight distribution of obligations and rights, it will be important for the advisors to know who the recipient of the advice given.
6.7 Leadership and foreign workers

In Denmark, the employment of foreign workers have challenged the leadership. It is both a cultural and language challenge.

There is no easy solution to handle that.

With foreign employee, you have to develop trust, commitment and motivation by working together.

Good guidelines to follow is:

- Support foreign workers with language training e.g. courses
- Be aware of family problems – and support them to solve it if necessary.
- Job description with target, goals, responsibilities and benefits that match the workers ability.
- Work on the workers skills.
- Use simple management tools like SOP and Lean

7 Management

From the very first day farmers are expanding their business, they experience new management challenges. Nothing is the same as before.

7.1 Size and scale.

The growth in size and scale is a challenge. When herd size increase the management practices, need to be adapted to the new herd size. The units of input to production (cows, heifers, calf, tons of feed produced and distributed, milk, meat and manure) grows a lot in numbers. To handle it is necessary to put new tools and practices in use.

Handling of a group of animals depends on the physiological state of the animals (heifers, dry cows, lactation start, lactation and late lactation).

Deviation from the “optimal” combination means greater loss, in term of resource utilization and finally economy. It becomes crucial to have tools and advisory support to manage margins.

In Denmark, the need for better utilizing of resources, on dairy farms, have become critical for the farmers and the stakeholders. Stakeholders wants to follow the performance and the progress on the farms closely. They want “facts and figures” to get deeper insight in the business.
Stakeholders demand procedures for a detailed planning and close follow up, on the production process. Both in numbers as well in time consumption. Cash and economy get much more attention.

7.2 From data to knowledge and information
To manage dairy farms, requires that collection of data, data treatment and presentation have to be easy, and quick. The results have to be presented in the way the users wants it (numbers, graphs, text), in due time, whenever the users need it. The information technology (IT) and digitalization will be helpful. IT will create new possibilities and it will challenges farmers as well as advisors in harvesting the benefit of all the data “born” and connected to the farm.

The principle of this process is be illustrated in fig. 11

![Data – information management process (DIMP)](image)

**Fig 11: Data – information management process**

Economic databases.

Collecting and reuse of data created by those who is working with the farm is one thing. As well important it is to get usefulness information and knowledge from the data for farm management. Value of the data is created when data have been through a proper data processing and transformed to information, and finally used for adjustment either automatic or by human action and intervention.

7.2.1 The Cattle Database
For many years, data collection in Danish herds have been stored in The Cattle Database (Fig.12).

![Cattle Database](image)

**Fig 12: Principle for data to and from the Cattle Database (own illustration)**
The information needed depends on the person who is going to use it. For the farmers it is important that data are available independently and in combination with other databases. E.g. the data registrations and information created on basis of veterinarian activities and interventions, is available for free use to the benefit of the farmer, together with other actors on the farm.

Today the Cattle Database consist of all the data about animals, feed production and feed used, born on the farm, veterinarian work and laboratories. All actors deliver data to the database.

7.2.2 Dairy Management System (DMS)
The Cattle Database together with the Economy Database and the Field Database are valuable information's for management and leadership on the farm.

The Danish farmer’s organization has developed a comprehensive program for management of dairy farms called Dairy Management System (DMS). DMS is a set of management programs that use data collected on the farm.

Fig. 13 shows the principle of dataflow.

Fig 13: Illustration of the principle flow in The Dairy Management System (own illustration).

With growing size of the herds there is an increasing demand and need to plan the expected production (production budget and feed plan) and follow up (feed and production control) based on the information available. There is a need for monitoring the survey the production process by using key performance indexes (KPI).

7.2.3 Planning daily, weekly and monthly tasks.
Planning daily, weekly and monthly tasks becomes important when the herd size grow. DMS support working plans by e.g. list for observation of animals, moving animals, drying off, animals for slaughter, and reproduction and so on.
The demand for work plan and management lists have increased with the growing herd size and the transition from tied up system to loose housing. Proper management lists supports the herd manager to go from handling of single animals to survey and manage group of animals.

7.2.4 Individual herd goals - KPI
It is important that the manager define individual goals for the herd e.g. targets for milk production, milk quality, reproduction, feed efficiency and production economy. Defining and setting a range of key performance indexes (KPI) is a way to follow the performance on a daily basis and to get in deep information if there are deviation. The KPI – program support in deep analyses of each index. Fig 14 shows an extract of KPI from a Danish farm.

Consequently there has been a growing demand from farmers to get advice and sparring about production planning (production budget, feed budget, feed planning, setting operational and strategic management and targets) and follow up on achieved production (feed control, period production control, monitoring of the production).

It has demanded new content of the advisory service now based on enhanced reliable facts and coaching about farm management. It has shown to be valuable for the farmers in documentation, information and contact to the stakeholders, especially the financer of the farm.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Status</th>
<th>Key figure (unit)</th>
<th>Achieved</th>
<th>Alarm limit</th>
<th>Reporting period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td></td>
<td>Milk delivered (kg/day)</td>
<td>8.906</td>
<td>Min 7.835 \ Max 9.072</td>
<td>Latest delivery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Milk quality (number of deductions)</td>
<td>0</td>
<td></td>
<td>Latest measure-ment</td>
</tr>
<tr>
<td>Reproduction</td>
<td></td>
<td>Inseminations of cows (Numbers)</td>
<td>8</td>
<td>Min 3</td>
<td>Last 7 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inseminations of heifers (Numbers)</td>
<td>1</td>
<td>Min 2</td>
<td>Last 7 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not pregnancy examined cows (Numbers)</td>
<td>4</td>
<td>Max 0</td>
<td>Last day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not pregnancy examined heifers (Numbers)</td>
<td>0</td>
<td>Max 0</td>
<td>Last day</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td>Disease treatment, cows (Numbers)</td>
<td>0</td>
<td>Max 4</td>
<td>Last 7 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New infection, lactation (%)</td>
<td>8</td>
<td>Max 15</td>
<td>Last milk recording</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New infection, dry period (%)</td>
<td>14</td>
<td>Max 35</td>
<td>Last milk recording</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dead animals (Numbers)</td>
<td>0</td>
<td>Max 1</td>
<td>Last 7 days</td>
</tr>
<tr>
<td>Feeding</td>
<td></td>
<td>Energy efficiency (%)</td>
<td>97</td>
<td>Min 93</td>
<td>Last feed control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Milk minus feed cost (kr/kg ECM)</td>
<td>1.38</td>
<td>Min 1.50</td>
<td>Last feed control</td>
</tr>
</tbody>
</table>

Fig. 14: Key Performance Index (KPI). First column is the subject, second column is status, third column is name of key figure, forth column is achieved result, fifth column is the alarm limit, sixth column is the period and the seventh column is last update of the figure.

Benchmarking of the farms performance is a source of inspiration to focus on where the production could improve compared to the benchmarking group. Fig 15 show results from benchmarking reproduction
performance of a herd with a group of 474 other herds.

The benchmarking shows the exact numbers and visualize the ranking of the farm, compared to the rest of the benchmark group. These figures support farmers and advisors to focus on subjects in production management, which have potential for improvement. The farmers in Denmark now ask about what this potential for improvement is worth in term of economy performance.

It is a new task for the advisors to answer the questions about the economy effect of an intervention and not only identification of the potential increase in production performance. An interesting question about the impact that the advice deliver to the farmer.

7.3 The feed value chain - Roughage production
Feed cost account for about 60 % or more of the cost of milk production. The first step in optimizing feed production is to know the cost of producing the feed. Of the cost of feed, roughage (grass, grass silage) is the majority part. The only return is when milk and meat, are sold.

7.3.1 The digital feed chain highway – SARF.
The feed production is a process of partly activities, which all add variable and fixed cost to the feed. It also means that optimizing this process is the obviously step, with good possibility, to reduce cost of production and increase margin.

Fig 16 illustrates the feed value chain:
The feed value chain shown in figure 16 is the physical flow.

It seem to involve a lot of registration work. It is, but the new technologies are under development and will easy intensive registration, collection and analyzing data. It is technologies for automatic data registration by censors, NIR-technology on forage harvesters and mixer wagons, and registration of feed fed to the animals, even in different subgroups.

It will create useful information for management of the feed chain. It is the digital data highway of the feed value chain. The system under development in Denmark. Systematic and Automatic Registration of Feed turnover in Milk production, SARF, is the name of the system (Kristensen 2017). It’s also called the SARF doctrine (Kristensen 2017). Using IT, all this data flow to and from Cattle Database and DMS, is with extensive data analyzes tools, like SAS, Kristensen (2017).

Using GPS to manage fieldwork, NIR equipment on the forage harvester and feed mixer, weighing cells on feed wagon, and automatic transfer of data between the inventory, equipment and databases are examples of new technologies that make it possible to get precise process control and information about the production process, and to identify points of improvements. It will make a revolution in feed production and feeding animals. It’s examples of tools used for PLF.

It’s important for the Danish farmers to harvest the benefit of the possibilities in the digital highway of the feed chain and use it as soon as possible in milk production – not at least when the herd size grows. It will at the same time demand new skills and services from the advisors to support the farmer in utilizing it.

7.3.2 The Roughage School
Interesting is how can implementation and use of new technologies be implemented on the farms? One way is to focus on production process (value chain) like roughage production.

In Denmark, roughage production has been in focus for several years and lately intensified in activities like “Grovfoderskolen” (Roughage school) (Laursen 2016). Groups of farmers make intensive registration of yield, resource utilization, cost and practice. At group meetings, they compare, learn about and compete to be the best to set target for production of dry matter, quality of silage. They compete about making the best quality of silage. They know exactly the production price per unit of feed. It encouraged them to produce input to milk production for less cost and waste.

7.3.3 NorFor, Compact TMR and FBO
To utilize the genetic production capacity of the dairy cows it was necessary to develop a new feed planning and control system. In cooperation with Denmark, Norway, Sweden and Iceland a new system was developed, called Nordic Feed Evaluation System (NorFor).

NorFor is a semi dynamic model to combine feed rations for cows, taking into account the characteristic of the feed components and the dynamic of combining the components. We also need new feed mixing praxis. A system called “Compact full feed” is developed. Compact TMR is a system with focus on the sequence of mixing feed into a complete TMR. The cow can’t separate the feed components in a Compact TMR ration. Together with NIR equipment on feed wagons, the composition of the feed ratio can be mixed according to the mixture recipe for the animals.

A new system and technology to follow up on feeding and production, called “fodrings biologisk optimering” (FBO) is under development (Kristensen, 2016).

NorFor, Compact TMR and FBO are example of development of new tools and technique used to plan and to follow the production in dairy herds. Using it, advice will evidence based and real knowledge. It’s going
to be on reality and not guess and standard figures from e.g. feed tablets. It could be called evidence based knowledge and advice. It will require a change in the way the advisers act. It call for more process advice than expert advice.

7.3.4 The feed chain and cost of capacity
Cost of capacity can be more difficult to dedicate to the different steps in the Feed Chain. The methodology Activity, Based Costing (ABC costing) can be used to estimate the cost of capacity (Oksen & Andersen, 2012; Oksen & Andersen, 2013; Søgaard 2010). Analyzes of the cost connected to the Feed Chain, is a good example on how to dedicate the resources and the cost of production to a certain activity and to optimize the production process and reduce waste in production. ABC requires a detailed registration of input and output in the different steps of the chain, both in biological, technological and economic terms. IT, sensors and applicable data program will in the future make this easy and fast.

This is a new area for the advisory system to support farmers to utilize the new possibilities.

7.4 Cattle Key (Kvæg Nøglen)
The “Cattle Key” is a management program tool to fulfill the need for follow production economy and production together with details about input and output, closely. It consist of a program to survey production and economy, in the dairy production, on quarterly basis. The program combines information from the productions database (Cattle Database) and the Economy database. “Cattle Key” reports gives a comprehensive overview of the production and production economy in term of gross margin per unit (cow, kg milk) and includes benchmarking with other producers using the program. Advisors, independent of profession, use the same information together with the farmer to follow and survey the production and economy, according to the budget. Together they can identify deviations from the budget plan. Because the report is covering a 3-month period, it is possible to identify deviations and intervene and correct the production or expected result.

In brief the benefits of this tool the advisory service is:

- Estimation of roughage yield in the field and roughage level in feeding.
- Compare prices of input such as bought feed, cost of minerals, cost of vet service, and cost of reproduction, with other producers.
- Compare achieved results with the budget and other farmer’s performance.
- Registration of feed consumption in groups of animals (dairy cows, heifer, calf, bull calf).
- Valid data for budgeting based on evidence.
- Motivator for the employee by setting goals and close monitoring.
- Visualize the effect from initiatives taken.

An example of a report for the Cattle Key program shown in figure 17:
Fig 17: Summary of periodic economy result for the Cattle Key program. (Extract from a farmers report)

The report content more detailed information for each summary row. Part of the line “Michellaneous cost” and “Variable Cost is shown in figure 18.

Fig 18 Extract of the Cattle Key report on the cost of Vet & medicine and Michellaneous Cost. (Extract from a farmers report)

The Cattle Key report also gives different technical, economical and biological key figures. Fig 19 show key figures about feeding dairy cows.
The report also shows the different result and comparisons in graphs.

Combined with using KPI program for daily follow up, it is possible for the farmer to identify and concentrate on improvements in the areas of production identified to have the biggest impact on the result.

Using the “Cattle Key” program advisors with professions in biological, technology and economy, have the same tool and background information’s about the farm. To get full benefit from the program they need to have minor skills in the other college’s profession.

7.5 Percentile analyzes
KPI and “Cattle Key” programs are excellent tools to inspire where to get progress. For a farmer it is not possible to be the best in every point when comparing with a group of farmers. In reality, farmers have different level of competitiveness at different points on the farm.

An overview of where the farm have a strong competitiveness and where there is big potential for improvement, percentile analyzes generated on basis of data from the production and economy databases is used.

Fig 20 illustrates the principle

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**Fig 19: Key figures from the Cattle Key report. Extract from a farmers report.**

**Fig 20 Percentile analyzes of a group of milk producers.**

Figure 20 shows an example. The grey spots in the report is results of a given farmers position compared to other farmers. E.g., the production cost per kg milk is 1.46 DDK per kg milk. It means that the farm belongs
to the 25% of the farmers with the highest cost, production cost of more than 1.46 DKK per kg. It shows there is a big potential for improvements on production price on that farm.

This type of program has shown to be a big inspiration and good tool for the adviser and the farmer to focus on improvement and to be aware that the conditions on each farm for performing well is different.

7.6 Management of economy
Management of economy is in definition simple. It is the process of making a budget, perform production, follow up on production and do the necessary corrections.

Many good programs for management of economy, like budgeting, liquidity budget and control programs exist. The biggest challenge for the future advisory system is to move those programs from standing alone to be able to combine program from economy, production and inventory programs.

In reality, there are many activities involved in management of economy and it is not that simple to practice. Different tools, have been developed to support this task on a farm. Budget program and profit and loss accounts are central in the process. There is both a “hardware” and a “software” side of the process. The “hardware” is the programs, IT-applications and the “software” is the human side of using and harvest the value and benefits of the programs for management.

7.6.1 Transversal advisory.
To get the full benefit of the economy programs and to fulfill farmers need for economic management, there is a need to improve cooperation between the different stakeholders and advisors around the farmer. There is an increased pressure to move the advisory system from working, thinking, and performing advice in profession “silo’s” to transversal advisory around the individual client. It means exchange of information between professions in economy (economy advisor, accountant), finance (financial advisor, lender and bank), biology (veterinarian, cattle and crop advisor) and the farmer.

The cattle and crop advisor submit good estimates of input and output to plan the production process in the barn, on the fields and to follow-up Economy advisor uses this to finish the budget with biological and economic figures and budget control.

The point is that it requires a need for enhance cooperation between professions. It is not that easy. It demands advisory training, good planning, willingness and commitment from advisors. Not all advisors have the preference, personality and skills to do that.

The advisors capability to work transversal in advisory means a lot when the advisor meets the farmer. Some of the initiatives taken in the Danish advisory system are mentioned here in the following.

7.6.2 Front and back office
People have different personalities. So is the advisors as well. For that, reason the advisory system in Denmark introduced and use the principle of “front and back office” staff. The “front” office staff is working directly with the clients, visiting and communicating with them. The “back” office staff prepare information to at meetings with the client and administration around the client, for “front” office staff. There is no clear definition of the term “front and back office” staff. The idea is to use the people skills optimal and to have efficient working process. Some people’s strength is to meet clients and not repeated working processes in an office. Other people is strong in collecting, preparing and delivering treated information to colleges who is in contact with the client.
7.6.4 Farm secretary.
A farm secretary is a person who goes to the farm on a regular basis and deliver administrative service. The service include what is agreed on like bookkeeping, write bills, checking and paying bills, prepare wage payment for employee, payment of different taxes. Some farmers prefer this service because they don’t like bureaucracy. They think it is inefficient use time. They want to have the peace of mind that they meet obligations and at the same time updated on news of practicing economy management.

7.6.5 Cash flow
One term in management of economy, have increased attention when the farmers grow in size. It is cash flow. Before the expansion period, there was no focus and awareness of cash flow on the farms. Growth in turn-over, increasing fluctuation in commodity prices and financial crises have enhanced the focus on the cash flow, from stakeholders and the farmer. A good overview of the cash flow is important for the farmers comfort about the development and leading bigger farms.

7.6.6 Long distance service.
The advisors in Norway have developed and utilized IT-technology to online long distance advisory service, especially about economy matters. Their challenge is the big distances between farmers and advisor. The distance in Finland is also big but not in the extent seen in Norway. It would be worthwhile to have a closer look at the Norwegian model. It could give inspiration on how to develop a practice of long distance service in Finland.

7.6.7 Disruption of bookkeeping.
New technologies will disrupt the way we practice most of the economy management today. Automatic handling of invoice means that bookkeeping will be automated and fast. With a proper set up of the accounting lines combined with automatic registration and transfer of invoice to specific accounting lines, will the speed up the process of accounting Annual accounts will make it much easier and be more precise about the cost of the different activities on the farm. The farmer will have the possibility to follow the economy online all time whenever wanted.

7.7 Management of cost of capacity.
Management of cost of capacity has become more important with growing herd size and the increasing uncertainty about external factors outside the farm, which the farmers have no influence. Management of capacity is management of distribution of the capacity, utilization of the capacity and providing capacity. Reality shows that it is difficult for the farmers to control. The management of capacity and connected cost is no “one size fit all”. It depends to large extent of the complexity of the production process, dynamic of the market and vulnerability of the enterprise.

Farmers experience frequent change in market conditions and the facility. Farmer’s possibility to quickly adjust and respond by changing way of production, type of production or sales channel is limited (Oksen & Andersen, 2012. Oksen & Andersen, 2013. Søgaard 2010).

Activity-Based Costing (ABC) is an accounting methodology that identifies the activities that a firm performs and then assigns indirect costs to products. ABC system recognizes the relationship between costs, activities and products. This relationship assigns indirect costs to products less arbitrarily than traditional methods.
Some costs are difficult to assign through this method of cost accounting. Indirect costs, such as management and office staff salaries are sometimes difficult to assign to a particular product produced. For this reason, this methodology has found its niche in the manufacturing sector.

ABC accounting can give valuable information about use of capacity e.g. in the Feed Chain.

7.8 Make or buy.
Management of cost of capacity is about combine the internal resources and possibilities for external deliveries and benefits. For dairy farmers it could be question about “make or buy”. Obviously, is the question about activities like harvesting grass, crop, seeding, manure which demand periodic activities and is difficult to achieve economy of scale and increased utilization.

To a large extent Danish dairy farmers use contractors for fieldwork, even all the fieldwork. We see increasing tendency farmers involved in contract production. It means that they write agreements with contractors to manage the field produce and deliver a certain amount of roughage and crop of a given quality, in storage of the farm at a given price.

7.9 Herd health management.
Today there is increasing focus and concern about animal welfare and health in the society. It is an important factor for stakeholders and the farming industry. It is about credibility and confidence among consumers and society. In other word “license to produce”.

This challenge will be even bigger and more important with the growing herd size. Farmers have to “prove” that it’s taken care of, in a proper and trustworthy way.

Many of the challenges, with health and animal welfare, require closer cooperation between the farmer, his consultant and veterinarian.

All veterinary activities and services practiced on dairy farms in Denmark is private business, supervised by The Danish Veterinary and Food Administration.

A specialized veterinarian practitioner in herd health management exist. It is a certification program called The Danish Veterinary Association’s (DVA’s) two-year certification program. The title is DVM, Certificate in Herd Health Management.

For many years, specialized cattle production advisors with educations like MSc. Agri., BA. or Technician, in Denmark, as well in Finland.

In the future and with bigger herd size, animal health and welfare will be much more in focus from society and the stakeholders. It challenged advisors and veterinarians in Denmark. Thats why we see the need for new initiatives to improve the skills, knowledge, practice and service about animal health and welfare.

A new program replaces the certificated veterinarian program. This program is for advisors specialized in cattle production (consultants) and veterinarian working with cattle production. It’s a 2.5 year program ending with certification (van Haun, 2017).

7.9 1 Mandatory health consultancy.
All dairy farmers have to have a mandatory health consultancy agreement (Obligatorisk sundhedsrådgivnings aftale – OSR) (Martin, 2016). The Danish Veterinary and Food Administration is the responsible authority. The private veterinarian, in cooperation with cattle production advisers, conducts practice. Depending on the herd size, there is different frequency of veterinary visit, obligations and possibilities for the farmer.
Figure 21 gives an overview. (after Martin, 2016)

OSR appointment is mandatory for herd size above 100 cows. There is a basic module where with possibility to participate in transversal advice or stable school. Organic milk producers mainly use this possibility. The optional part consist of different modules with different possibilities and obligations. Dairy farms are in one of three categories, depending on the estimated need for consultancy. The groups is “Normal consultancy”, “Extra consultancy” and “Intensified consultancy”. The grouping depends on heard health and welfare status or whether the farmer found guilty in violation of animal welfare.

Although the OSR is a public system, there is a recognition of the need for cross discipline effort and cooperation to keep a good health and animal welfare.

In Finland, you have the CENTRALIZED HEALTH CARE REGISTER FOR FINNISH CATTLE HERD (Naseva 2017) that collect and survey the health and welfare condition on dairy farms. In Finland, the veterinarians are public employed and connected to municipalities.

There seems, although, to be a total lack of connection and cooperation between the veterinarian and cattle advisor about production, herd health and animal welfare. In the future, a stronger connection will be needed. Farmers will ask for it when the herd size grow. There will be a need for shifting the health work from treatment to preventive work to promote the health of the herds. Preventive animal health and welfare will save the farmer for big production loos.

It’s obvious in the current situation that ProAgria could established a position as production veterinarian, with focus on dairy production service and consultancy to dairy farmers, in close cooperation with the cattle advisors.

7.10 Lean and SOP

Lean and SOP (Standard Operation Procedures) are two well-known and recognized tools to manage dairy farms.

The Danish advisory system developed “Lean in farming”. A comprehensive book about “Lean in Agriculture” is published (Nielsen & Pejstrup, 2012) in Denmark. It is introduced in Finland.

SOP is especially interesting because it is a combination of text and figures/drawings. Figures and drawings are “international” language. It helps word dyslexics and people from foreign culture and language to understand the work task and procedures. It supports the work to done with the same focus and procedure
when different people are doing the work at different time. A collection of different SOP’s in different language have been developed (Nielsen, 2012)

Lean and SOP are useful on all level of management and leadership of dairy farms. It is useful on strategic, tactic and operational level. They are good tools used in strategic, tactic and operational planning and in implementation of farm strategy.

One thing is the tools. Another thing is to use the tools in a practical and beneficial way. Here there is room for training, courses and advice about how to use it and how to motivate employee using the tools.
8 Financial stakeholders
Financing demands management, like management of production. The financial discipline has become much more complicated and developed the last 20 years.

A comprehensive survey of the funding of farms in Denmark can written by Olsen & Pedersen (2014).

8.1 Funding farms in Denmark.
In Denmark, a funding system for real estate, called mortgage institutions (credit union), has existed since 1797. They exhibit bounds to the market, where investors buy the bonds. Fig. 22 illustrated the principle.

Fig 22: The principle of the Danish Mortgage Bound System

A detailed description of the system is to be found in a publication from RealkreditRaadet (2016).

The total financing of a farm is roughly in three parts as illustrated in figure 23.

Fig 23: Composition of funding farms in Denmark

Mortgage institutes finance 60 – 70% of farm value. Rest is bank, other and own equity financing.
8.2 The development funding farms in Denmark.
Funding of Danish farms changed the last 20 years. Finnish agriculture probability will see the same trend with the growing herd and farm size.

With the increased size of farm enterprises, it became more complicated to fund farms and manage financing. It created an increasing demand for impartial advice about funding and management of funding.

Danish farmers would relative easy get financing for farming and borrow money in the years before 2008. Do to that, some farmers failed to do a thorough planning and preparation of expansion. It had the consequence, for some cases, low efficiency and effectiveness and poor financial results. Some lost the broad holistic view, the aim and target planning. Many didn´t calculate ROI in the decisions process.

Banks and mortgage institutes offered the borrowers new types of loan. Short term 1, 3 and 5 years loans with or without repayment for 10 years and variable interest rate. These types of loan to a large extend substituted the former common loans with fixed interest rate and 20 or 30 years repayment period. The increase in value of asset, especially land, made it possible for farmers, especially before 2008, to finance expansion, and low efficiency, by new loans. Valuation capitalized by investments paid by loan. There were an enormous willingness from the funders to finance farming.

The financial crisis in 2008 brought the bank sector in a historic crisis. Especially those exposed to financing farming and real estate. It led to closure lot of banks, by merger or bankruptcy. The rest of the sector got very reluctant to finance farming, which made it difficult to get well prepared healthy investments funded.

To the farmers the crisis started in 2008 and later escalated with the period of low commodity prices on milk, in 2015 lead to many farmers going bankruptcy. This cries lead to develop a concept for turnaround developed especially to farm system (Rudolph & Nielsen 2011).

8.3 New Agricultural act in 2010.
In the same period, the Agricultural act changed. From 2010 it was no longer a requirement that owner of agricultural properties was obliged to have residence on the farm and possess the Green Certificate (farmers education certificate). By further liberalization of the Agricultural Act in 2015, it became possible for people without farming background and legal companies, to invest in farming.

8.4 Major changes in financing farms
We now see a major change in financing farming. Pension funds starts to invest in farming, entrance of foreign investors, private persons outside farming invest in farmland and production facilities.

Caused by the increasing numbers of types of loan available the need for independent advice about financing increased. The Danish advisory organization (DLBR) organize and established specialized advisory service about funding and risk management. One example of this is AgroMarket (Anonym 2017.2) another is AgroCura (Anonym 2017.1), mentioned in chapter 5.

Establishment and financing start-ups companies and the growth of small and medium size company (SME) is difficult. The Danish government wants to enhance and ease that process. That is the purpose of The Danish Growth Fund.

8.5 The Danish Growth Fund
The Danish Growth Fund, (Vaekstfonden n.d.) is a state owned and controlled investment fund that contributes to the creation of new companies by providing capital and expertise. Since 1992, The Danish Growth Fund, together with private investors, co-financed growth in more than 6,600 Danish companies with a total commitment of more than DKK 17 bio. The Danish Growth Fund invests equity and provides
loans and guarantees for small as well as medium-sized enterprises in collaboration with private partners and Danish financial institutions.

Lately they offer a new type of loans, under The Danish Growth Fund, caused by the increasing difficulties for young farmers finance and take over farms. The loans is “The Agriculture Development Loans”.

8.5.1 Agricultural Development Loans

Agricultural Development Loans are high-risk loan capital, aimed at younger farmers, with ambitions to acquire and develop existing agricultural properties. The loan can cover the part of the investment that exceeds 90 pct. of asset value. If there is a need for financing within 85 pct. of the total investment, it is possible to supplement the funding with other loans from the Growth Fund.

An Agricultural Development Loan is subordinated loan capital and irredeemable by The Danish Growth Fund. The loan will therefore count as owners’ equity on the balance sheet, which will increase the solidity of the business.

An Agricultural Development Loan serves solely as a supplement to a complete financing solution including financing from a financial institution. It is possible to combine the loans with other loans from The Growth Fund. The interest rate is 2-3 percentage points higher than the interest rate on senior bank loans.

The Danish Bankers’ Association and The Danish Agriculture & Food Council developed that type of loan in cooperation. Administration of the loans is in charge of The Danish Growth Fund, with risk coverage to a certain extent.

8.6 Financing by Pension funds.

Pension funds have shown interest in investing in farming. We see the first farmers with funding from pension funds by AP pension, (AP PENSION 2017). The financing institute is an AP-fund subsidiary. Dansk Farm Management A/S holds the management mandate for Dansk Farmland K/S (Dansk Farmland K/S 2014).

AP Pension is the first Danish pension fund to allocate a substantial amount of funding and acquisitions of Danish farms. They finance land and buildings not operations. The concept will allow farmers with limited equity to become farm owners by renting a farm period and then with an option to take over the farm in year 8 – 10 of the engagement when the farmer have had possibility to collect equity and further financing is possible.

8.7 Private investors

The last couple of years there have been several cases where private persons invest in farming. They typical buy land and production facility. Few buy the whole farm. They hire persons to manage the farm. The manager can be the former owner who have had financial problems (risk of bankruptcy) or first time farmers who persuade the former owner to keep part ownership.

8.8 Other types of funding farms

Farmers and their advisor tend to think conservative about financing. There are many possibilities and types of financial instruments for funding investment in business and farming in Denmark. The same would possible be the case in Finland, at least in the future. A list of possibilities, seen in Denmark, is (Rousing 2017):
a. Own private financing  
b. Increase capital by exhibiting stock in Ltd.  
c. Mortgage loans  
d. Private loans  
e. Sellers mortgage deed  
f. Bank loan  
g. Supplier credit  
h. Factorizing  
i. Leasing  
j. Sales- and lease back  
k. The Growth Fund (www.vf.dk), Growth Collateralize, Growth loan to entrepreneurs, Responsible loan, Growth guarantee, VF venture  
l. Innovations fund (www.innovationsfonden.dk) Talent (entrepreneurial pilots), Innobooster, Grand solutions  
m. Export credit fund  
n. Market development fund  
o. Support for local action groups (LAG)  
p. Realdania (www.realdanis.dk)  
q. Crowdfunding (reward funding, donation crowd lending, borrow crowdfunding, investment crowd funding)

**Table 1. List of funding options in Denmark (Rousing 2017)**

Not all possibilities for funding farming is in use today in Danish agriculture. The most common used today are the points a, c, d, e, f, g, i, k, and l.

It’s clear that we will see several ways of funding in use in the future. It underlines increasing demands for an independent service that can guide the farmer in possibilities and choice of funding. Danish farmer’s advisory system offer that service to farmers – what about the Finish advisory service? Finish advisory system should establish an impartial financial advisory service to farmers.

### 8.9 Lenders requirement to management and leadership.

Pension funds and other external investors will assess both the annual operating profit and the capital and economic gains. The annual operating surplus can rarely meet only the return requirements of external investors. External investors therefore must calculate significant gains through capital and business gains – i.e. price increases on farmland and buildings. Long term perspective, these gains (real price development) are close to zero, so the gain can only come by buying when prices are low and selling when they are in the top. (Otte, 2016). Thus, there is more or less talk of speculation. We therefor can see a situation where agricultural properties is acquired, primarily because of a speculative return is expected and secondly an operating profit "(Otte, 2016).

Funders in general don’t like big variation in economic performance.

The new type of funding and lenders demands thoroughly business planning containing a proper business model, strategy, properly management and follow up. To support that and to enhance the management and leadership of the farm, investors often demands management and leadership support, e.g. establishment of a farm board.

It created new business possibilities for the advisory system where proper skilled employees have the possibility to be board members. A completely new subject for the advisory system.
9 Other stakeholders

In Denmark, we learned that it’s important to taking into account all farmer’s stakeholders to get full acceptance of the society, to use the landscape and nature. A strict regulation on using the land exist.

9.1 Farm development affects many stakeholders

The significant structural development in farm size, affects many of the farmers' stakeholders and the nature of the landscape. It is why it is important for farmers and farmer’s community to be aware of these effects and to keep good relationship to the society and local community. (Birkkjaer 2014)

Relationship with stakeholders must be grown and nurtured. There are so few people today, who have a connection to farming. They need information to understand and accept, for example, why farmers are driving tractors, with heavy machine, on the roads. In Denmark, farmers who expand herds have good experience by invite the neighbors and other interested, to an information meeting about the plan to build and expand the farm.

Parallel with the significant structural development of agriculture, society increased the requirements for the environment, to create the foundations of the changing landscape of the future.

Field sizes, new roads and rail structures will, over time, overcome the difference between nature and field management and not indicate a sharp division between protected and used land. Larger cohesive fields will form the basis for continuous natural streams for the benefit of flora and fauna as well as the rural experience. (Birkkjaer 2014)

With land transfer and big production facilities, it becomes necessary to have a look at the infrastructure as well removal of a significant number of buildings and entire farms or redevelopment of old farm buildings.

9.2 Trails in the landscape

Another way to the contact to citizens is to give them access to agricultural landscape. An example how to promote the dialog between citizens and landowners is the concept “Trails in the landscape” (Ministry of Environment and Food of Denmark).

Trails in the landscape are hiking trails that allow all interested to experience the Danish nature that are otherwise unavailable to the public, like farm land.

Trail in the landscape is a collaboration between the landowners and public authorities.
10 Education

Today the majority of the farmers have a certificated education. They get new knowledge from farmer’s vocational school, universities, research centers, local advisory centers and colleges. The farmers will be more international focused and they will collect information from travelling and searching on internet. They will even attend courses abroad.

The original knowledge transfer chain has changed. One of the question is who is in charge of knowledge transfer to farmers? Naturally, advisory centers have the interest, because it’s normally a part of their business plan. What about universities and research stations? It will depend on agreement among the actors. There is no right or wrong in this matter. You can’t expect the farmers to be faithful to the organization. They will in the future have tendency to go directly to the origin of knowledge source. There is a tendency that suppliers and byers of farmers input and output, includes advice and service in the engangement with the farmer. For the advisory organization, the role as a knowledge disseminator is a way to keep updated. For researchers the obligation to transfer knowledge is important to keep in contact with farmer’s daily reality and for personal acknowledgment.

10.1 Development of farmer’s education in Denmark.

Education of farmers have developed radical the last 30 years. The education has moved from focusing only on management of the farms and its economy. Today it include education in strategy, leadership and running bigger enterprise with several employees. A development promoted by the fact that farmers are faced with free trade, open market for their products and much more awareness to exist on market conditions.

In Denmark, we see more farmers with an extended education in economy, strategy and leadership. They are able to challenge advisors in these subjects.

As a result, the adviser’s skills are under enormous pressure to perform, demonstrate and deliver impact of advice they give to farmers. I demands consultancy training and change in consultancy. Here we see a new type of advisors called “Business advisor”.

10.1.2 Farmer’s education

Finland have a strong and comprehensive education system that gives possibilities for a strong pure academic university education as well as a strong vocational education that can lead to bachelor and master degree.

In Denmark, the basic farmer’s education starts after secondary school (9 years). It is possible to become “green student” (gymnasium level) or take the education on agricultural college. The education is using school periods with Work Based Learning (WBL). Education and career tracks, is illustrated in fig 24. In the education there is an enhanced focus and including courses in especially economy and leadership.
One thing is education. In Denmark, we also experienced need for training and education after the basic education, as a farmer and the farmers who have been farming for many years. Denmark saw a lack of strategy and business education among farmers. Farmer education system has now introduced strategy and business in the education program and the advisory system submit courses and education program. Still there are many farmers who do not have and business plan. Both for the young farmers and the other farmers there is continuously a need for increase in business skills and leadership.

The courses are organized and submitted local and national.

Fig 24: Agricultural education and Career tracks - Denmark

At national level, SEGES have development and training unit called SEGES Academy (https://www.seges.dk/akademi). SEGES Academy has developed a new type of courses called Masterclass in Strategy and Business development. Target group is farmers. The courses meet the continuously growing demand for business and strategy planning. SEGES organize the courses in cooperation with business schools and universities. The farmers get a certificate when they have passed the course.

10.1.3 Learning groups
Roughage school is what you could call a hands-on type of course and training. See more about Roughage School in chapter 7.

Depending on what the farmer need and their preferred learning style, there are different methodologies for knowledge transfer. Fig 25 illustrates this variation.

Fig 25: Illustration of different types of learning groups
Fig 25 show that the learning interaction goes from “club” activities like network, stables, discussion groups to more focused single farm focus like advisory board and mentorship.

Discussion groups is a well develop concept. It’s a very useful concept for inspiration and learning. Depending on what the farmers need and their preferred learning style, it is important for the farmer to choose the best concept for him.

10.4 Future business managers.

In Denmark, there is a lack of good business managers and leaders in agriculture. The question is about how do we find and educate them in the best way. One way is to learn it by on the job training. It is important that the education and advisory system, to have offers that match those people needs for education.

In Finland, it seems like business education is not included in the basic education of farmers. It would be necessary to introduced strategy and leadership at an early stage in the farmer’s education. At the same time, there is a need to introduce high-level leadership courses and education. Beneficial in cooperation between the farmer's education system, business schools, universities and advisory organization.

An example from Denmark is the development of a type of course called Masterclass for example in Strategy and Business development (Fauerholt 2016)

Masterclass is for farmers who want to develop their business portfolio.

Another very successful program is Business Academy education in leadership and management. This course is for educated farmers who wants to strength their skills in leadership. The course contains five subjects and a final project. Tree subjects is obligatory.

The obligatory projects are:
1. Leadership in practice/Farm business leader
2. Organization and working psychology
3. Strategic leadership

Two subjects are optional:
   a. Management of economy
   b. Lean

Finally, the participants have to deliver a project.

10.5 Advisors training

Farmer’s advisory organizations all over Europe, and in general the world, started in a timeframe where it was about bringing knowledge and services about specific production subjects to farmers. Farmers role and their knowledge have changed enormously since then. The need for advice as an expert has developed to include a need for process consulting. It is two total different roles in terms of problem solving content and process.

10.5.1 From expert to process facilitator

Edgar Schein described different types of consulting in his work, and published it in an article “The Role of the Consultant: Content Expert or Process Facilitator”. Schein define and argue the prerequisites for the role as consultant Content, Expert and Process Facilitator.
Table 2 is a summary of his findings.

**Table 2: The Role of the Consultant: Content Expert or Process Facilitator (Schein 1978).**

<table>
<thead>
<tr>
<th>Expert</th>
<th>Doctor-patient model</th>
<th>Process consultant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client has made the correct diagnoses of his or her problem</td>
<td>Client has interpreted the symptoms correctly</td>
<td>The nature of the problem is so that the client not only needs help in making an initial diagnosis but also would benefit from participation in the process of making that diagnoses.</td>
</tr>
<tr>
<td>Client has identified the consultant who have the knowledge and capabilities to help.</td>
<td>Client can trust the diagnoses provided by the consultant.</td>
<td>The client has constructive intent and problem solving ability.</td>
</tr>
<tr>
<td>Client has communicated the correct problem.</td>
<td>The client will reveal the correct information, i.e. will trust the doctor enough to “level” with him or her.</td>
<td>The client is the ultimate person, who knows the kind of intervention or solution that works in his or her situation.</td>
</tr>
<tr>
<td>The client have thought through and accepted the consequences of the help he/she receive</td>
<td>That the client has thought through the consequences i.e. is willing to accept and implement whatever prescription is given.</td>
<td>If the client select and implement his or her own solution, the client’s problem solving skills for future problems will increase.</td>
</tr>
</tbody>
</table>

In the future, there still is a need for expert consulting but the need for process consulting will increase. It requires training of advisors, development of new methodologies in the advisory system.

“Trump in consultancy” and “Business consultant advisor” are too example developed in Denmark.

**10.5.2 Trump in consultancy**

In every case of consultancy, there is a process to be aware of and actions to achieve an impact.

Danish advisory system put emphasis on increasing the performance on farms in a project called “Løft bundlinien – Skab forandring og nå dine mål” (Marcussen 2012) (Boost the Bottom line – Create change and achieve your goal) (author’s translation).

This project managed to compile the majority part of the challenges’ advisors face in modern farm business consultancy with the growing farm size.

Leaders, project leader, advisor and farmers, were interviewed about what they think gives effect of a counseling. The answers were the same; it is about how you perform your advice. The results of the project was development of a range “Trump cards” the consultant can “play”.


The Trump cards put impact in focus of all phases in the consultancy process. Each Trump card places the focus on a tool or technique that can help ensure, that the interviews generate specific proposals that have both the necessary impact, as well as the farmer’s full support and understanding. Both of these are necessary if the consultancy is going to have the desired impact in the end.

An English version of the publication, named “Trump in consultancy” is published (Glerup et al. 2014).
10.5.3 Business advisor.

In Denmark, we faced a challenge about how to match the future business owners need for development their farm business.

It is no longer enough, that the consultant possess the right knowledge or being a specialist. The consultant also participate in implementing the knowledge and make it give value. It requires other skills attitudes than what dominated advisory system before. It is a change process. It requires that the consultant continuously develop their skills and role as business advisor. It requires that the lateral advisory act in a way that a holistic business advice will function. It means change in the culture of the advisory system surrounding a business advisor.

There is training and education program developed for the new type of consultants called business consultant. A business consultant is not dedicated to people with a specific profession, as an economist. The business consultant possesses the ability to see the business in a holistic perspective. He can create the right network around the farmer and bring in the right specialist into play, to support the farmer. A bit like Key Account Manager.

The purpose of a business advisor is to support and challenge owners and leaders on a strategic level in a developing process. In Denmark, it is typical farms, where the complexity is on a level, where the owner has a need for sparring from a business advisor. The A publication “Virksomhedsrådgivning - en ny dagsorden i rådgivningen” (Business consultancy - A new agenda in the counseling (authors translation) is published (Videncentret for Landbrug 2013).

SEGES organize the comprehensive education program to train consultant as business advisor. At the same time, we see a necessary develop in the organization of the advisory centers to support the business advisor concept. The business advisor also have a “toolbox” of methodologies to support the consultancy process.
11 Organizations surrounding the farmer

Without development and reorganizing the way the advisory organization works, there is a risk that the organization lack behind and become out of synchronization with the changing surroundings and the stakeholders. Then the organization risk to end up as a looser – and the biggest looser at the end will be farmers.

There are many stakeholders in the dairy sector with interest in serving the sector and dairy farmer with knowledge, services and physical asset.

11.1 The stakeholders.

Universities are doing basic research about animal and production science. Luke is in charge of applied research and demonstration. Universities of Applied Science gives higher vocational education (polytechnic) in farming. Agricultural colleges offers basic education as farmer. Veterinarian is in charge of vet service. Banks and mortgage institutes offer financial service and loans. FABA service the farmers with animal genetic. Suppliers (technic and inventory, commodities) provide physical asset, industry (dairy, abattoir, and feed supplier) bye and collect commodities from the farm. MTK as the farmers’ political and social voice. Finally, there is the farmers’ advisory system in charge of advice and knowledge transfer.

11.2 Enhanced cooperation among stakeholders

To be a strong sector there is a need for enhanced cooperation, joining and sharing resources to achieve a certain goal. In this case, the goal could be, or is, a viable dairy production sector in Pohjois-Savo, the milk belt in Finland. A strong sector for the benefit of the dairy farmers, the regional industry connected to farming and utilization of the natural resources of farmland.

During the interview for this report, actors have expressed a wish and need for enhanced cooperation between the different stakeholders in dairy production. The restricted amount of resources each actor have, limit the progress. A tighter cooperation between the actors, and a review and reorganization would be necessary to coop with the fast development in herd size and the future requirement for service and advisory the farmers must need.

The interviews conducted for this report, among actors in the dairy chain, indicate that there is a wish to closer cooperation. It’s also expressed that Agricultural University and Luonnonvarakeskus (Luke) seems to be too far away from the dairy farmer’s situation.

How to obtain closer cooperation. An example to look at, for inspiration to bring the actors closer, is how the Danish Cattle Research Center established in cooperation with state universities, applied research center and dairy farmers organization.

11.2.1 Farmers as driving force to enhanced cooperation – Danish Example.

In Denmark the farmers organization (Danish Cattle Federation) always have had a close and fruitful cooperation about applied research and education of researchers. The farmers previously had several farms used for demonstration and applied research in milk and beef production. It started in 1967 with the foundation of the research station Egtved. Egtved was an applied research station for testing beef production. In 1983, the research station Ammitsbøl Skovgaard was established to perform applied research with dairy cows and heifers.

Over time the facilities worn out and there was a need for optimizing the utilization of resources. There also was a wish to be closer to the researchers and do more research based on loose housing system and group-housed dairy cows. The farmers union (Danish Cattle Federation) build a new research center close to the national Research Center Foulum in Jylland, called The Danish Cattle Research Center (KFC). This new
research center opened in 2000. It’s build on state owned land (leasing), close to the state research center (walking distance), Research Center Foulum. It saved resources, offered state-of-the-art facilities available for researchers. It got overwhelming interest from researcher, to perform research the dairy farmers needed.

The basic philosophy for management of the center is that the researcher freely can use the facilities. They had to bring funding and resources for the projects they wanted to do, by them self. It is a research center with focus on groups of animal. The national Research Center Foulum mainly focus on the individual animal.

11.2.2 The Danish Cattle Research Center.
A reorganization of the universities in 2007 led to research center Foulum joined with University of Aarhus to be AU-Foulum. A reorganization of KFC and the research Au-Foulum led to creation of The Danish Cattle Research Centre (DKC), in 2013.

The DKC is a joint operation partnership between the cattle research facilities at AU-Foulum and the cattle research facilities at KFC. DKC (and comprises two units: DKC – Burrehøjvej and DKC – Blichers Allé. Both research locations include unique and state-of-the-art research facilities for dairy cows, calves and young animals. The focus is on the accomplishment of various research and development projects. Projects accomplished with the participation of both national and international knowledge institutions, students and companies (DKC 2017).

DKC as well, have a strong focus on knowledge transfer to farmers about planned projects, active projects going on and results. A farmer group were affiliated to KFC when it was build. The purpose of this group was to support and make sure that KFC works with relevant subjects and challenges, the farmer meet in everyday life.

DKC is an example on how a close and fruitful contact and cooperation about work, among the dairy farmer’s stakeholder.

It succeed if there is both vision, will, courage and a strong guiding coalition behind the chance needed.

11.2.3 Researchers and PhD students employed in farmers advisory organizations.
In Denmark farmer’s organization used the possibility to cooperate with universities, by employee PhD students in Industrial PhD projects. Industrial PhD projects is a three-year industrially focused PhD project, where the student is hired by a company (e.x. Farmers organization) and enrolled at a university at the same time. Industrial PhD programs is managed by Innovation Fund Denmark (Innovationsfonden 2015)

Another example of cooperation between the stakeholders is employment of researchers and lectors, full- or part time, for a shorter or longer period. By this mutual appointment, it is possible to close part of the gab, between research and farm practice, speed up the knowledge transfer and implementation of research results, keep the actors focused and close, to perform for the benefit of the farmers. It is shown to be a win-win situation.

11.3 Dairy cluster and milk academy – Pohjois-Savo
To promote and strengthen the dairy production in Pohjois-Savo, an “ecosystem” of actors creating a cluster, could be a way forward to closer cooperation, innovation and development.

A cluster is a strong construction to create value among the actors in the cluster. Establishment of a cluster will demand tighter obligating cooperation. A cluster could be a knowledge cluster.
An example of a cluster is AgroFood Park in Aarhus Denmark (Agro Food Park, 2017). Agro Food Park build’s on cooperation between strong partners from the Danish food and agricultural industries. The focus is on developing food of a high quality. Agro Food Park wants to become the leading innovation and growth center for food in Denmark.

A regional cluster of actors should be the driving force for the activities in the area, concerning knowledge, service, development, education, innovation and development of the dairy sector in the Finnish milk belt.

Natural actors of such a cluster is: s of Applied Science, ProAgria Pohjois-Savo, MTK, banks, suppliers, LUKE, Agricultural University, Agricultural Colleges, Valio (Itä Maito), Atria, HK-Scan and so on.

A goal for such a cluster could be to improve and increase utilization of the natural resources for milk production in the milk belt of Finland, by efficient collaboration among the stakeholders, attraction of resources, coordination of activities, improving knowledge and knowledge transfer, attract talented researcher, teachers and advisors and to be an attractive area for a life career.

Fig 26 illustrates the principles in a cluster ecosystem

*Fig 26: The principle of cluster creation (Langkilde & Madsen 2014)*

Ecosystem is a concept that describes how to create innovation by bringing together the right players from a particular industry in a certain geographically defined area. When gathering the right knowledge and the right people, it significantly strengthens the opportunities for innovation and growth.

Creating a cluster is ambitious. Another ambitious system could be to create "Pohjois-Savo Milk-academy". The stakeholders would be the same. The focus would only be on education, courses and farmers service and the perspective of innovation has to be left out.
11.4 Agricultural knowledge & information systems.
Farmers need reliable and relevant knowledge transfer, orientation and support to continuous develop their business, solve problems and handle expectations from stakeholders. There are several ways the farmer have access to new knowledge and knowledge in general. The best systems in Europe create strong links between universities, public ministries and agencies, agricultural knowledge centers, agricultural colleges and vocational schools, advisory companies, and farmers and vice versa.

EU-project PRO-AKIS has collected a comprehensive description of the agricultural knowledge and transfer systems from 27 European countries.

PRO AKIS aimed to answer the question “How and from what sources can farmers get reliable & relevant knowledge, as well as orientation & support in order to continuously evolve to successfully solve problems, and to respond to external expectations & development opportunities” (ProAkis n.d)?

In Denmark, the knowledge transfer system gradually change. Before it followed a more straight line: universities and research stations produced knowledge – the central advisory organization (now SEGES) transformed it to practical use for farmers and advisors – the advisors in DLBR transferred the knowledge to the farmer through their activities. Today knowledge transfer is done more in cooperation between the researchers, published in magazines a la news about research, and presented online on LandboInfo.

When researchers and others get funding from the Commodity Levy fund system, grant recipient is obliged to include they will disseminate the result achieved. It means that funding of a project also include resources and obligation to disseminate and implement the results.

More about the Danish Farm Advisory System in Madsen (2014).

Another system that is word while to look at is the Iris Farm Advisory System is organized (Prager and Thomson 2014).

The Republic of Ireland is unique in having a substantial component of its AKIS within a single Organization - (Teagasc, the Agriculture and Food Development Authority). Funding of the system is by both public funding and by the users pay.

The learning point is that knowledge transfer is not economically viable and efficient without some kind of basic funding.

The reason is that it is difficult to make a business of knowledge transfer produced in public organizations and when it cannot be sealed from been used freely. So due to market failures solely private funding of knowledge transfer is problematic. It is a part of the free rider problem, where few fund the activity and all can use it without participating in the funding. Coexisting of public funded and private funded services seems to be both efficient and strong.

11.5 The Danish Commodity Levy fund system
Funding of projects, common activities and new ideas, is always a challenge.

A short introduction to how the farmer’s organization in Denmark typical finance research and project activities described here.

The Levi funds have the purpose to secure common financing of activities in research, marketing, prevention of diseases, that with advantage can be supported jointly.
The Levy funds get their resources from levy on the different commodities and partly from return of pesticide taxes. In total, there is 11 Commodity Funds. To the dairy sector, especially three funds are relevant. Per Mille Fund, Milk Levy Fund and Slaughter Levy Fund. The Per Mille Fund get funding from The Pesticide Levy Fund. The Commodity gets funding from levy on sold products from the farm. It is about 0.008 DKK/kg milk delivered (app 0.00106 eurocents) and 28 DKK slaughter cattle (€3.73).

The Per Mille Fund distributed DKK 250 m (€33.3 m) to 348 projects directly or in cooperation with other funds (levy funds and other national funds), in 2016.

The right to collect levy is funded in the Danish law, and thereby legal and statutory. It also means that it is under supervision by the government and it avoid “the free rider” problem, where you have farmers benefit from common activities without participating in paying.

A board manages each Fund. The Minister of Environment and Food appoints members. The stakeholders recommend the board members. The majority of the members is farmers who pay the levy. A minority of board members represent the public interest and from all walks of life. The role of the board is to decide how the funds, should be invested and recommend to the minister the levy rate.

The target groups for funding is public and private research- and knowledge institutions and industry associations. The funds only support activities coming from the industry as a whole to benefit. For that reason the funds is seldom of interest for private companies.

Fig 27 shows the cash flow of the levy funding.

![Fig 27: Cash flow of the Danish Agricultural Fund system](image-url)
12 Discussion
This report disclose some of the important factors to be aware of when farms are expanding in size. It’s done by taken a retrospective look, at the development of the Danish dairy farms the last 30 years.

The purpose is to take learning points from that development. Learning points to be used for further inspiration, reflection and initiatives to be taken by the MAST project group, in a situation where Finland dairy farmers is expected to grow rapidly the next 10 years.

Trends and scenario
The need for change is escalating. To know the future conditions for a business is important for all entrepreneurs. The same for farmers. The world is getting more open, free trade is important for the wealth of the society, consumer’s preferences changes, global challenges affect farming all over the world and competition is getting fierce.

The farmers need leadership information. It means that the future farmers need to be aware of the trends in society and the world. Awareness is necessary because their investment have long-term influence on their business. For that reason, they are in constantly need for information about future trends, megatrends, framework conditions like legislations and the effect of those described by scenarios. The results have to spread in courses, lectures, newsletters magazine or social media.

To handle the future challenge farmers is also looking for coaching, mentorship and tools to handle Human Resource subjects. It exist in the business world in general. It needs to be taken more seriously in farming society, to support the future farmers.

Megatrends and scenario analyzes is a normal part of bigger companies work. So it would be a naturally and necessary subject for the industry to do together with farmers organization and jointly communicate to the milk producers. Here ProAgria will have an important and crucial role.

Some farmers are at the cutting edge, innovative and risky. They are often lead users. It will be a disaster for organizations if they don’t involve them in development of future scenarios and development of services.

Strategy
No farm expansion should in the future without a strategy for the enterprise. It is about trustworthiness. To have a strategy and the ability to communicate it to stakeholders have become conclusive for the possibility to develop the farm. There is an increasing pressure, from the stakeholders, to have a strategy for the farm. They want to know what is “inside the head” of the farmer. That applies to funding investments, trustworthiness and confidentiality and getting approval of expansion. It also is essential for the farmer himself. Here a strategy provides peace, peace of mind and direction, in the everyday work, in a turbulent world.

Finnish farmers work with strategy seems to lack behind. Everyone should have a strategy. Strategy for establishment, expansion, maintain production and exit strategy will all the farmers.

The strategy has to be dynamic, easy to work with, agile and cost efficient. The “Dynamic Strategy” process could inspire.

Learning point from a fast period of expansion is that the farmers create problems for themselves if the expansion wasn’t based, upon a holistic view of the farm in the short and long run, and a proper well-developed strategy.
Expansion

Expansion is a long lasting work. Where is the impartial support for planning, building, commissioning and introducing proper working routines in the new expanded barn? Danish experience show that there is a need for impartial advice in the different steps of investment and expansion.

The planning phase has to be in line with the holistic strategy. That is why strategy is the first step. Proper basis for decision need both strategy and calculations of ROI.

Before starting the building phase a precise detailed description of all elements in the construction and inventory with a detailed timeframe, is needed. Corrections in the building phase is expensive.

Bringing the new barn in use has first to be done after everything is finished and ready to use.

There is a need in Finland for a proper advice and service to support all the phases in farm expansion. It could be from development mentorship and special advisors. It could also be by joining the scattered advisory service submitted by the industry (dairy and abattoir) with the ProAgria in a “farm development advisory group”.

Don’t leave it alone to the building companies. It’s a special profession and responsibility to construct productions facilities for future animal production taking in consideration productivity and animal welfare.

Acquisition of farms and land reparation

Acquisition of a farm is difficult. That is why share farming is developing rapidly in these years. Different models has taken place in Denmark. Apart from the traditional known partnerships, it is about acquiring part ownership like taking over part of the property and sharing expenses and income for the purpose to build up equity. Fantasy seems to be the only limit. There is a need for new way to take over a farm. Lately, the principle form the New Zealand Share milking system is practiced in Denmark.

An obvious possibility for the farmer’s organizations is to establish a real estate subsidiary. It has shown beneficial for the Danish advisory organization to do. It will help matching buyer and seller. A subsidiary is easier to promote and practice than a big organization where one or two advisors is taken care of it maybe as a part of their job.

The scattered and long distance to the fields for Finnish dairy farmers is a costly and production inefficient situation. It’s not a sustainable and lasting situation. There is a need to do something. Reparcelling of land is necessary for improving efficiency in production. Farmer’s organization, advisory system and the public could promote land reparation through information, announcement and campaigns. It’s important that the farmers’ organization and advisory system is proactive in this case. The public sector could be a strong supporter to the process, by offering help to overcome some of the hazel in this process. Have a closer look at the Danish history and practice about reparation today.

Leadership

In the future, every business depends on good leaders and leadership. It’s a total different discipline than management. Leadership covers many different tasks like strategy formulation, human resource and farm organization, risk management and farm development.

Leadership will need more attention and focus for the future farmers. It is not a familiar subject for most farmers, because they may never have met it during their lifetime. Younger farmers have faced the subject during their education. There seems to be a need for enhanced focus on leadership training and offering learning and training possibilities for farmers at a level least BA or dedicated diploma level.
Leaders need inspiration to leadership. Inspiration by attending “VIP discussion groups”, evaluation of leadership style and constantly challenging their leadership by mentorship is useful tools.

The vocational schools has an important role in “seeding” interest for the subject for the students. The universities of applied science should offer leadership training and courses. Courses can be offered in cooperation with business schools, universities and ProAgria.

The future farmers need a service that can help them in organizing the farm and support HR-subjects like vacancy announcement, contracts agreement, performance appraisal, conflict management and redundancy. An obvious task for the advisory service to offer.

**Management**

Manage the future farms will with the help from the Information Technology be more princely. To build for utilization of the information technology it is necessary to use proper tools. Data catching, storing in databases, proper analytic tools and algorithm to transform data to useful management information.

With proper tools it is possible to follow and manage the production close and in real-time and to intervene in the production with correction at an early stage. That can reduce loss dramatically.

A comprehensive tool for management of production planning and control is the Dairy Management System. Example of production and economy planning and control is the CattleKey program. Example of tools to set target and benchmarking is the program Key Performance Index, Benchmarking with percentile analyzes.

In Finland it seem like there is a need for development of a production budget and control program that combine biological, technological and economic data. Especially there seems to be a total lack of herd health and production advisory, based on data combination from production database and herd health database combined with a proper veterinary production advisory service.

There is a need for moving the advisory from thinking and practice “silo” advice to performing more cross profession advice - transversal advisory service.

Be aware that the new progress in information technology will totally disrupt the current way of bookkeeping service. It also gives new possibilities. A digital highway, under development, will supplement the feed production value chain. It will create an extensive insight to the input and output in the different stage of the feed chain, and put economic value on this, so the farmer and advisor get better background for adjustment and change.

It is recommended to follow these developments, because it will be an important part of management of the future farms.

**Finance and stakeholders interest**

The majority of funding of farms in Denmark have for years been by the mortgage model (RealkreditRaadet 2015). The model is a very strong, reliable system because it recognized for its transparency and high security for both lenders and byers of bonds. It is also a part of the explanation why it is possible to run farms with a relative high debt rate in Denmark, compared to other countries, and at the same time feel safe as producer.

The financial loan products offered from mortgage institutes and banks has exploded. It’s difficult for the farmers to have an overview of the offerings and to choose of the best combination. It escalated by
entrance of other stakeholders in the market for funding farms, like Pension funds private investors and all other source of fundraising. There is a need for impartial debt management advice.

It had led to formation of subsidiaries of the advisory organizations offering financial advice, forecasting, information and helping farmers to get the farm funded.

It will be necessary in the future to find new funding systems and offers for the farmers. ProAgria could beneficial offer this service to the farmers, highlighting the activity by creating a financial service subsidiary and in cooperation with the public authorities develop new types of funding products. One example for inspiration from Denmark is the Growth Fund and The Agricultural Development Loans.

Pension funds and other external investors will assess both the annual operating profit and the capital and economic gains.

External investors, especially, will include calculation of gains through capital and business gains – i.e. price increases on farmland and buildings. They will purchase agricultural properties for speculative return in increased price of farmland and operating profit.

The demand from foreign investors, involved in financing agriculture, for high production performance, stable returns on investment and strong economy results seem to be unavoidable.

Here is a new business for the advisory system to create a strong type of business advisors, and support the farmers in thoroughly business planning containing a proper business model, strategy, properly management and follow up.

**Education and training**

The future farmer will be better educated than the farmers leaving the sector are. They are better educated in disciplines like business planning and leadership. They will have a need for extensive outlook. They have in general moved form only focusing on management to focus on mastering leadership.

Education systems seem to lack offering farmer’s high-level education in leadership like BA level or higher. It is a job for the advisory system together with the farmer’s education system, business schools and universities to create those high-level courses. It’s also about lifelong learning. Examples to look at is courses created by SEGES-AKADEMI like Masterclass in “Business development and leadership” and the academy education in leadership.

One type of farmers need basic training in strategy for the farm. Other need training in development of the farm business by expanding to other productions – a diversification strategy.

The advisors need training and courses to master skills moving from being an expert to be process or facilitator, to create long lasting impact of their advice. For several years, it has been in focus in Denmark. Examples is “Trump in consulting” and development of business advice, done by special educated Business advisor.

**Organizations surrounding the farmer.**

Development and reorganization of organizations is crucial for survival. If organizations do not develop and reorganize, they risk to be out of synchronization and to be in balance with the world that surround them. Many organizational stakeholders surround the farmers and an enhanced cooperation between those seems to be necessary to coop with the future.
A fruitful model, but also ambitious, is to create a cluster. It would be naturally because Pohjois-Savo is the center of milk production in Finland. A less ambitious model could be to create a Milk Academy.

No matter which model you go for, the success depends on the will among the stakeholders to support the organization both economically and leaving power of decision to the organization. To change organization and setup demands vision, courage and determination. There is a need for a strong change coalition.

The report describes creation of the Danish Cattle Research center for inspiration.

It has shown to a strength, if the farmers can submit some kind of financial resources to promote further collaboration and organizational development. The Danish farmer’s submission of research facilities is an example.

Danish Commodity Levy system, funds activities of common interest. It avoids the “free rider” situation where farmers benefit from common activities without participating in paying.

It would be worthwhile to consider creating a cluster organization or milk academy and try to secure some common funding of the activities for example by a levy system.
13 Conclusion and subjects for further reflection and discussion

The purpose of this report is to give possible answers to questions from the project group of the MAST (MAST hanke) on “the path of growing farms successfully – learning from Danish farmers”. This report is partly a retrospective description of the fast development in herd size in Denmark since 1990 and what the Danes has learned, the development of tools and advisory support in that period.

The report describes subjects in the terms: the future, strategy, expansion, acquisition and reparation of farm, leadership, management, finance and stakeholder interest, other stakeholders, education and organization surrounding the farmer.

The report gives an insight to what has been subjects of importance during the Danish expansion period from 1990 to 2017. The report tries to answer questions raised during interviews of the members of project group. Not all questions raised is possible to answer in this report. A listed of proposals for activities and initiatives is given in the conclusion chapter. The purpose of this list for further reflection and discussion.

When expanding the farm, the life of farming moves from being a lifestyle to hard-core business. It challenge the mindset of the farmers and advisors as well, to become much more business orientated. It is an enormous cultural challenge.

Growing farm size, it’s becomes extremely important for farmers to create and articulate a strategy for dairy farm. A clear and consistent strategy, that is agile and communicable. It’s necessary to create trustworthiness and confidence among the stakeholders (funders, supplier and buyer, employees, neighbors, employees and so on) about who the farmer is as a person behind the farm, and where he want to go. A clear strategy provides peace, peace of mind and direction, for the farmer and the family, in the everyday work in a turbulent world. Every farm need a strategy.

Leadership becomes more essential. Acquiring skills in leadership is life-long learning. The seeding of interest for the subject must start in farm schools and further development of the skills by attending classes and courses, in vocational school and universities. Active farmers have to maintain and challenge their leadership by attending courses, discussion groups or mentorship.

Expanding farms will need more loan and get higher debt ratio. There is increasing need for an impartial financial service, for example, a subsidiary of the advisory system, to advice about loan types, debt management and supporting in getting alternative funding. Could for example be funds, private investors, crowd funding etc. The same will be the case for property transaction, land reparation, leasing and tenancy. Could be realized by establish a real estate agency as a subsidiary to the advisory system.

Management of bigger farms will depend on the use of information technology and “big data”. Proper databases to store data registration and development of data analyzing to transform data to information used management in real time, to survey, correct, manage production is needed. Data analyzes combining biological, technological an economical to follow KPI, and benchmark the performance of the bigger farms to find potential areas for improvement, is required. The report present some of those tools.

There is a need for the actors in the dairy farming society in the Finnish Milk belt to enhance cooperation, optimize raising funding, and use of resources. Creating a cluster of stakeholders is one way to create future progress. Another possibility, but less ambitious is to create a Milk Academy.

There will be a need for farmer’s organization to have resources promote to influence on R&D and innovation. Could be done, creating a commodity levy system, like the Danish.
13.1 List of initiatives for reflection and discussion.

<table>
<thead>
<tr>
<th>Nr</th>
<th>Initiatives – subjects</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>Strategy lab/school.</strong> A group of actors creating a strategy lab that offers strategy work and development of farms.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Keep Finland agricultural land viable.</strong> Let your farmland and production facilities in production and keep the value of your property. A promotion campaign lease out land.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Reparcelling and land transfer</strong> Visualize and communicate the economic and management benefits of better internal organization of farmland. Get the public authorities involved to ease the process.</td>
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<tr>
<td>4</td>
<td><strong>Dairy Trend, scenario and market news.</strong> An activity which role is to present market information, market analyzes, trend analyzes, R&amp;D news, news about dairy farm innovation.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Real estate subsidiary</strong> An agency to connect buyer and seller (farmer match), handling alternative ways of organizing takeover and ownership. Administration and service.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Dairy cluster – Finland</strong> Enhance obligating cooperation among stakeholders, advisory, services, industry, education, R&amp;D, fundraising, innovation in the finish milk belt.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Demonstration farms</strong> Dedicated farms to demonstrate new, technology, management and economy.</td>
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<tr>
<td>8</td>
<td><strong>Building advice.</strong> Establish a dedicated advisory service to support the expansion and building process.</td>
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<tr>
<td>9</td>
<td><strong>Commissioning advice</strong> A service that guide through the commissioning of new production facilities by create a plan with tasks, goals and checkpoints. Follow the production process for and introducing new management practice</td>
</tr>
<tr>
<td>10</td>
<td><strong>Standard farm production module</strong> Develop standardized farm construction that can established by using standard modules. It could keep down the prize of new barns.</td>
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<tr>
<td>11</td>
<td><strong>Financial subsidiary</strong> Service to support borrower in selecting and management of loans and debt. Expertise in alternative funding. Guide farmers in “the financial product jungle”. Market for the service could be other target groups as well.</td>
</tr>
<tr>
<td>12</td>
<td><strong>Comprehensive database for farm management.</strong> Harvest the benefit of IT to create biological, technologic and economic databases for data collection, data treatment (from data to information) to manage the production. The programs for further development of KPI, benchmarking and evaluation of potential in production.</td>
</tr>
<tr>
<td>13</td>
<td>Veterinary production management service</td>
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<tr>
<td></td>
<td>Establish a veterinary production management service in ProAgria offering regular farm visit, examination of the herd to be up front health and welfare problems in the herds.</td>
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<tr>
<th>14</th>
<th>Impact assessment procedure and tools.</th>
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<tr>
<td></td>
<td>Develop an evaluation procedure for the impact of the advice to farmers.</td>
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<tr>
<th>15</th>
<th>Farm management advisor</th>
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<tr>
<td></td>
<td>Dedicate and hire a former farm manager of a large herd to offer farm management support and advice to larger farms.</td>
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<tr>
<th>16</th>
<th>Business advisory service</th>
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<tbody>
<tr>
<td></td>
<td>Develop specialized business advisor specialized in supporting and challenging owner-managed on strategy level in a process of development of their business.</td>
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<tr>
<th>17</th>
<th>Enhance transversal advisory</th>
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<tbody>
<tr>
<td></td>
<td>Farmers need holistic perspective of their farm. To fulfill that they need advisors mastering transversal advisory. It has to trained and exercised.</td>
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<tr>
<th>18</th>
<th>Discussion and farm groups advice</th>
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<tbody>
<tr>
<td></td>
<td>Establish and manage discussion groups. Examples could be within subjects like:</td>
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<tr>
<td></td>
<td>• VIP group “Leadership, strategy and economy”</td>
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<td></td>
<td>• Stable schools in specific management subjects like calf rearing, roughage school</td>
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<tr>
<td></td>
<td>• Farm development groups for farmers who plan to expand</td>
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<td></td>
<td>• Production benchmark groups</td>
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<td></td>
<td>• Discussion groups for bigger farms</td>
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<tr>
<th>19</th>
<th>Human-Resource service</th>
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<tr>
<td></td>
<td>Service and advice in the field of human resource management. Includes writing vacancy and announcement, recruiting workers, interview, selection, negotiation, legal matters, redundancy and staff interview.</td>
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<tr>
<th>20</th>
<th>Innovation group of farmers</th>
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<tr>
<td></td>
<td>Establish a group of farmers to develop services.</td>
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<tr>
<th>21</th>
<th>Commodity levy fund.</th>
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<tbody>
<tr>
<td></td>
<td>Establishment of a levy fund system to support R&amp;D projects. The fund resources should co-fund different kind of subjects, which are best done in mutual interest.</td>
</tr>
</tbody>
</table>
14 References


NorFor Retrieved May 10th, 2017 from http://www.norfor.info/about-norfor/about/


15 Appendix.

Abbreviations:

**AU-Foulum** – University of Aarhus Research Center Foulum

**BIG DATA** - is a term for data sets that are so large or complex that traditional data processing application software is inadequate to deal with them

**Compact TMR** – A mixing procedure mixing the feed components to an extent that the animals can’t separate the components when eating.


**DLBR** – Dansk Landbrugs Rådgivning

**DMS** – Dairy Management system

**Earn out** - is a contractual provision stating that the seller of a business is to obtain additional compensation in the future if the business achieves certain financial goals.

**GAB** – is a process through which a company compares its actual performance to its expected performance to determine whether it is meeting expectations and using its resources effectively.

**KFC** – Cattle Research Center

**PEST** - examines the political, economic and social environment that enables a company to thrive and technological changes that may eventually affect its profits.

**SEGES** – a subsidiary of Danish Agriculture and Food Council ([www.agricultureandfood.dk](http://www.agricultureandfood.dk)). SEGES provide the farmers with the best possible tools, the latest knowledge and the very best consultancy.

**SWOT** – is a process that identifies an organization’s strengths, weaknesses, opportunities and threats.

**TFP** – Total Factor Productivity (TFP) measures. Integrates all inputs and all outputs in the calculation of a production process – like the dairy chain.

**TMR** – Total mixed ration containing all the feeding feedstuffs in a federation for an animal.
## 16. Interviews

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<tr>
<th>Name</th>
<th>Profession and e-mail</th>
<th>Date</th>
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<tbody>
<tr>
<td>Jarmo Korhonen</td>
<td>Farmer Lapinlaiti, <a href="mailto:skorhonen1@luukku.com">skorhonen1@luukku.com</a></td>
<td>2-3-17</td>
</tr>
<tr>
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