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Dairy Partnership

Dairy Development in emerging economies: A motor for sustainable and healthy growth?

Report of the Dutch dairy event
Veenendaal 27 Nov 2019

Colophon

Dairy Development in emerging economies: A motor for sustainable and healthy growth?
Dairy Development in emerging economies: A motor for sustainable and healthy growth?

Authors

Jos Bijman, Simone van Vugt, Geert Westenbrink, Frans Verberne, Janine Schoeman en Wim Goris, 2019

Contents

Netherlands East Africa Dairy Partnership

1. Welcome and introduction

Frans Verberne of NFP welcomed the 89 participants (see List) and introduced the Netherlands Food Partnership. The NFP takes a support role to coalitions such as the East African dairy partnership. The ambition for today's meeting is to discuss needs, challenges and opportunities and propose the broader Dutch agenda of dairy development in emerging economies.

Main facilitator Paul Vriesekoop of CRV introduced the topic: demand for dairy is growing and its nutritional importance for children is clear. Meeting demand brings sustainability issues when intensifying the dairy sector. Today's discussions will enrich the Discussion paper (a draft to which many contributed) and the proposed agenda for dairy and development.

2. Dairy Development and intensification contributes to Healthy food, Gainful employment and Sustaining the agro-ecological base

2.1.1 Key note Jan van der Lee (presentation prepared with Jos Bijman).

Why dairy? Healthy for children, animals turn poor quality nutrients into high quality food, manure helps us to close nutrient cycle. Why dairy development? Rising middle classes include dairy in their diets and developing domestic dairy sector is better for the country than imports. Also good for rural economy and income. Why the Dutch? Our production intensive model may not fit. We should not push technology out of context. Experience and expertise should a) Adapt solutions to context and b) Keep learning from successes and failures. Exchange activities with the 4 key actors: Private Sector, Policy Makers, Civil Society and Knowledge Institutes such as today can help us with this.

A new option for East Africa consumers is to buy milk from ATM dispensing machines, avoiding cost of packaging and possibly drawing more milk into formal chains. Trade-offs are price, convenience and safety. Policy makers balance public health and economic development. Processors' options are buying from smallholders (issues with quality, seasonality, loyalty) or from abroad. Farmers compare options outside dairy with making the transition from low input/low output to a high input/high output dairy farm. This decision depends on the availability of inputs, services and a secure market.

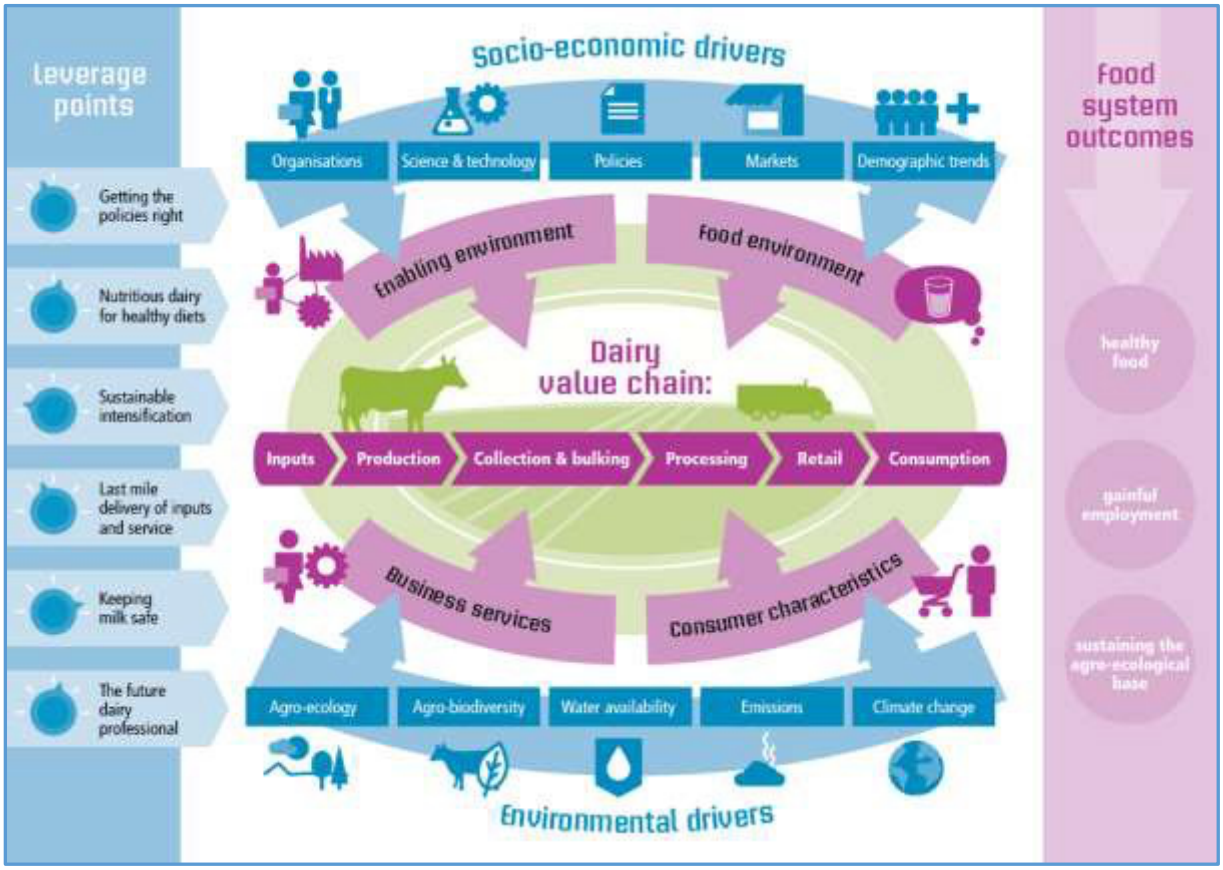
Improving production and conservation of fodder requires equipment and related business services. Successful contractors bring down cost of fodder for farmers. Resource efficiency may be managed through the ration of concentrates fed and through the manure (nutrient cycling, sale).

The food system approach is a useful tool to look beyond production and understand how all these components interact (See Visual below). The tool is also clear about the 3 outcomes: Healthy food, Gainful Employment, Sustaining the agro-ecological base.

The working paper identified 6 focus areas:

1. getting policies right (input, service, quality control, trade, investment),

2. the future professionals (about youth going into dairy sector, vocational training, private and public extension/ training),
3. last mile delivery of inputs and services: getting inputs and services close to farmers (especially smallholders, youth and women)
4. sustainable intensification involves the entire system including environment (circular agriculture, feeding, breeding, technology),
5. keeping milk safe: quality insurance
6. nutritious dairy: dairy development in relation to healthy diets for children and other people



Farmers are entrepreneurial and willing enough to change, our dairy development interventions should be about creating the conditions that enable them to change and result in dairy sector growth. It is about system perspective and collaboration, leaving assumptions at home and instead adapt to the context, while continuously learning from the process.

2.2 Questions:

Do we consider other dairy animals? The Dutch easily focus on cows, which is majority of dairy animals, but yes in some contexts it is about goats, camels, yaks.
What about sour dairy products and cheeses, instead of fresh milk? This is indeed an opportunity, especially where only children and elderly drink fresh milk. Rather than pushing fresh or pasteurized milk, we could look into traditional dairy products next to other processed products with a steady market. So far, big companies and projects have not.
Where should you start? Actually, many donors already started, so a joint roadmap or program is appealing. More important is that we agree on the way we work (analyse situation, see what is feasible, what are the skills and knowledge needed). Remember that one single solution does not apply everywhere, even within a country one needs to adapt and to keep learning.

3. Reducing the environmental impact means acknowledging the interaction farm, chain, food system

3.1 Reflection Corina van Middelaar (presentation prepared with Simon Oosting).

On the global level, the livestock sector, including the dairy sector is a major emitter of greenhouse gases and intensive dairy production can contribute to land degradation.
A key local impact problem is that many farms lack manure management (74% of farms in Indonesia discharge manure into the environment). This leads to eutrophication, the release of nutrients to the soil and the water in amounts that damage biodiversity and contaminate drinking water
The loss of nutrients also has an economic dimension. The loss of nitrogen (N) may equal the amount of N that is purchased as fertilizer. N losses vary per region (soil type, number of farms). Even in ideal situations, nutrient cycles have losses: ammonia volatilizes, nitrate leaches. A solution to reduce losses is recoupling animal and arable production.
Interventions to reduce greenhouse gases (GHG) emissions should not only focus on the GHG from rumination but also consider emissions from feed production and from storage and application of manure. Increasing milk yield may help the milk GHG intensity (>yield, <emissions/kg) but we should not forget the 'non-market' functions (draught, savings etc.).
Reducing the environmental impact means acknowledging the interaction farm, chain, food system. It should consider to minimize nutrient losses, avoid soil degradation, consider food-feed competition (value by-products that humans cannot digest), reduce the number of non-produce animals and minimize fossil fuels (in fertilizer and mechanization).

4. The recent success would not have been possible without all the work in the previous 50 years.

4.1 Reflection Rinus van Klinken (SNV): presentation

Lessons from earlier speakers are: dairy sector is of relevance and it is part of an interlinked system, so development requires a systemic approach. Also, dairy farmers are willing to change, so our main challenge is to create pre-conditions for them. The last 50 years of development showed on average only 2% of dairy output growth, is that all we can show? What are the triggers to accelerate change? Uganda is an exception: domestic consumption went up (including school milk paid by parents) and regional dairy export boomed in the last 5 years.
Milk collection through cooperatives uses coolers and aggregates at intermediate level. Advanced collection includes additional services to farmers which increase loyalty. Research shows a close link between seasonality and milk price fluctuation, while the average price increased.
Quality based milk payment system means a system change. Change in production system, from extensive grazing system to semi intensification (fencing, water, additional feed) and need for knowledge of paddocking, feed conservation, services from veterinary, training, products and finance.
The SNV-TIDE programme involved Dutch diamond actors: Bles dairies, Agriterra, PUM, Yoba, WUR, APF, EKN. TIDE also engaged in NEADAP to discuss dairy issues at the regional and higher level.
The ambition is to continue this learning approach in search of sector transformation. The last slide shows the start of this process with a small grass chopper, replaced with heavier machinery within 5 years. This recent success would not have been possible without all the work in the previous 50 years.

5.Break-out sessions

PowerPoints and notes for each session can be found at this event page:
https://agriprofocus.com/dairy-event-with-neadap

Session A: Nutritious dairy.
Facilitator Saskia Osendarp, introductions by Diane Bosch and Herco Hekking.
Dairy is part of healthy diets, especially for pregnant women, children, elderly. The challenges are in the triple burden of malnutrition (underweight, overweight, micronutrient deficiencies) and in some dairy products (added sugar, breastmilk substitutes).

Session B: Keeping milk safe.
Facilitator Toon Keijsers, introductions by Martin de Jong and Annabelle Daburon
Farmers hold the key to improving milk quality? What are incentives for them and other stakeholders to keep milk safe. How to build and implement a system for continuous improvement of quality?

Session C: Sustainable intensification.
Facilitator Simon Oosting, introductions by Robert Baars and Gjalt de Haan.
The session is all about interventions to intensify the dairy food system. What do farmers want to adopt and how does it fit in the value chain. And how does that help sustainability from social and environmental perspectives in the longer term.

Session D: Input service business models.
Facilitator Jos Bijman, introductions by Bertken de Leede and Catharinus Wierda.
Transformation of dairy sector requires right inputs, services and conditions. How to organize this business-wise in support of entrepreneurial farmers. What type of companies and cooperatives work best in what context? The service support sector usually is a mix of SME and cooperative services. Both SMEs and cooperatives can play the facilitation role – Bangladesh vs Kenya.

Session E: Getting the policies right
Facilitator Frans Verberne, introductions by Rinus van Klinken en Geert Westenbrink.
The success of dairy development depends on business and policy. How to influence and interact with national government to make dairy transformation a success? How can Dutch actors collaborate and influence national policies, and what is role of embassies and Dutch ministries? Can they help?

6.Panel discussion

Participants: Saskia Osendarp (MicroNutrient Platform), Jos Bijman (Wageningen UR), Catharinus Wierda (Solidaridad), Atze Schaap (FrieslandCampina), Johan Verhoek (Koudijs Animal Nutrition).
The panel reacted to two 'investment priorities' per session. The audience could indicate their support for each priority via Mentimeter.com. See the votes here and in brackets after each statement.

Session A: Nutritious dairy.

- Dairy development programmes (DDPs) should include nutritionists. (7,1)

- DDPs should facilitate the option (*for farmers*) to sell milk and buy nutrients back. (4,8)

For the industry, the nutrition and consumer side are the priority and purpose of it all. Consumption is still far below WHO recommended levels. Focus on nutritional value of milk is key. All DDPs develop farms and livelihoods are connected to consumers buying the products. Farmers and other stakeholders should have this purpose of their business in mind.

The second priority is understood as poor dairy farmers selling milk and buying back cheaper sources of proteins. This is a good practice at dairy collection points, like a case in Indonesia where women handle the milk money and products are available (from animal drugs and concentrates to food items like eggs, rice and even health services). It is noted that households more active in the market run the risk of their food security status going down. Projects offering such services may interfere in the local market and put other shops out of business.

Session B: Keeping Milk Safe.

- Participatory approach to define standard accepted by all stakeholders (8,9)
- Kickstart implementing quality-based milk payment systems by processors (8,5)

(Results may be affected by a deviation in the score range, 5-10 for this session).

For the industry, food safety is a basic responsibility for governments, they should drive this process. And they need all stakeholders to help keep milk safe, depending on the local context. In Pakistan, only 5% of the milk is processed, the rest uses informal channels like in many other countries. So adequate regulations and basic infrastructure (laboratory, data center) raise cost price of formal channel only. Government should take responsibility and allow extra cash to drive farmers in managing quality. Payment systems may be implemented gradually and in due course include small-scale dairy.

Session C: Sustainable Intensification.

- Dairy production should be linked to the land (7,3)
- Invest in inclusive perspective (8,1)

The first is a clear yes in the Netherlands but in developing countries the land link may be excluding smallholders and landless farmers who do zero-grazing and source fodder from road sides. According to session participants, the future is for dairy production coupled to land/grass/fodder. The advantage of grazing is that urine and dung are separated which reduces methane and ammonia losses. It may also bring additional income when sold or used in crop production.

Comment on the second priority: the more market oriented, the less inclusive the sector. It just does not go hand in hand.

Session D: Input service business models.

- We need to invest in exploration of the strengths and weaknesses of different business models in inputs and services (7,1)
- We need to invest in the improvement of the quality of inputs and services, particularly in inputs-related extension and training (8,5)

The point made on first priority is that no single model (small SMEs, one large coop) fits all, we need to understand what works best in a particular context. Comparing models should look into the quality of inputs and services rendered.

On the second priority, Dutch inputs have a high quality, but that is not always appreciated by farmers, whose main driver is price. The hope is that extension and training on quality result in more appreciation and business results. A smart mix of skills/knowledge and availability is needed.

Session E: getting the policies right.

- The donor culture contradicts with the commercial culture; we need accelerators for sector change and not just another project. (7,8)
- Embassies are crucial actors in Development at country level; they should have capacity to act proactive in national policy discussions. (7,2)

Donors should not push projects where business is not viable but at the same time subsidies or co-investments can be meaningful in the start-up phase. How to know what is right? Some Dutch businesses struggle with competitors that got Dutch donor funding. Other challenges are for NGOs that receive a blend of grant and loans, they need to professionally manage both in order to help accelerate the dairy sector.

Embassies can play a crucial role in engaging and supporting the policy dialogue in emerging economies. This is a role beyond managing a project portfolio and solving issues around import and export. For this policy dialogue, it is important that the agricultural councilors and the food security experts work aligned combine knowledge and connections and work on system changes.

7.Closing words

Wijnand van IJssel, on behalf of the Ministry of Foreign Affairs and Ministry of Economic Affairs (LNV) expressed his appreciation for the Dairy Discussion paper, the presentations and discussions this afternoon. There is a lot of knowledge and expertise in the room.

- It is important to keep the impact and outcomes in mind. Dairy development is not only about sector development. The sector level indicators should reflect the impact we all want in the end.
- Dairy as a topic is broader than what is covered by the Dutch flag. How do we want to relate to other donors (e.g. WorldBank / IFC) and include this broader perspective? Also, how to relate to national (and sub-national) governments in emerging economies and their policy priorities.
- The cross-cutting issues are reflected in the paper: sustainable nutrient cycles and the inclusiveness vs business, but they desire some more attention.
- What are you here for? One expects for collaboration. So, how do we move forward: we should use the collective knowledge. NFP can help at impact level and do the reverse engineering from impact back to what needs to be done.

Wijnand calls for next steps in order to a “**deuk in een pakje boter te slaan**”, which is a Dutch expression meaning making a real difference.

8.Appreciation

The dairy event was attended by 89 people of which 65 gave us feedback using the evaluation card pictured.
Their appreciation on a scale 1 – 10 was:

Documents	7,1
Plenary opening	7.5
Breakout session	7.2
Panel debate	7.2

The dairy event in Veenendaal was organised by a core team of Jos Bijman, Simone van Vugt, Geert Westenbrink, Frans Verberne, Janine Schoeman en Wim Goris.
They like to thank all contributors and participants that made this event a success. Please find more information at

- https://agriprofocus.com/dairy-event-with-neadap
- http://liquidprogram.net
- https://www.3r-kenya.org/dairy/

Register for the mailing list on dairy and development by sending an email to Janine at jschoeman@agriprofocus.com

Dairy & the Dutch

Dairy Development in Emerging Economies

Veenendaal, November 29, 2019, Jan van der Lee and Jos Bijman

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Why dairy?
Why dairy development?
Why Dutch dairy development?

Outline of this presentation

- Dairy stakeholder perspectives and trade-offs
- Dairy development cases and lessons learnt
- Food system approach to dairy development
- Global agenda for Dutch Dairy Development

A consumer's choices

Where can I buy safe milk that make my kids healthy?

That **packaged milk** went bad in three days last time. It's too expensive for my purse anyway.

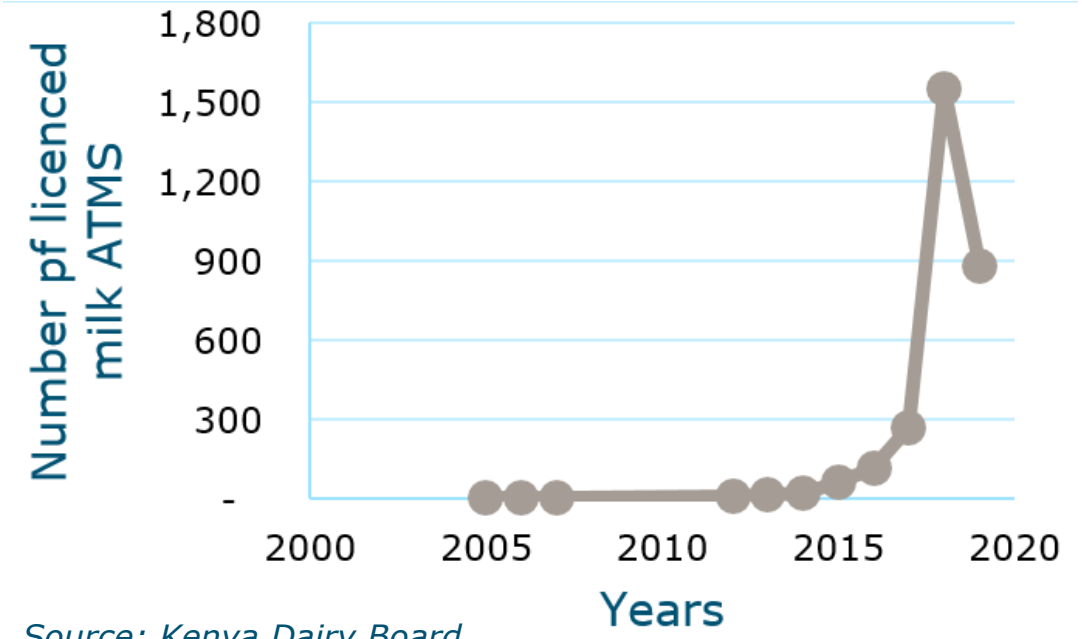
That **hawker's milk** is in the hot sun all day. And where does it come from?

What about that **ATM milk dispenser** at the corner shop? The price is okay, but do they clean it properly?

What mix of safety, price and convenience demands do your consumers have?

Kenya - are ATMs part of the solution?

Sale of pasteurized, chilled milk, any volume, at 2/3 price of packaged milk (quality may be an issue)



Source: Kenya Dairy Board

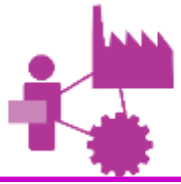
A policy maker's choices

According to the industry, we really need to do something about the quality of milk sold by those ATMs.

But if we increase quality standards, the ATM operators will turn around and charge the additional costs either to farmers or to consumers.

If the consumer price goes up, consumers will buy more raw milk from the informal market, so what is the net gain in terms of safe food consumption? Serve the rich or serve the poor?

If we really want to make a difference, we need a quality assurance system across the entire sector and get serious about enforcing it. Let me talk about it with the processors association!



Policies are the end results of weighing trade-offs

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A processor's choices

Where will I source more milk, now that these commercial farms can't supply more?

There is a lot of milk with those smallholder coops, problem is with quality, seasonality and supply loyalty. To make a difference, I would need to invest in inputs and services for those smallholders.

Should I buy milk from across the border? Should I step into this joint venture with Danone, so I can import milk powder, seeing how close they are to the minister?

Investments in inclusive supply chains can make good business sense, but require hard work and stamina

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A dairy farmer's choices - intensifying production?

I need to sell more milk to feed my family and to send my children to school!

Is dairy more lucrative than chickens, cash crops, or working at the plant?

Can I make all the necessary changes - AI, barn, fodder crops? Can I afford the feed, the vet? Where will I get seeds and finance?

The coop is so slow in paying. What happens if I sell to those hawkers?

Enabling environment, business services and dairy demand need to be right for transitions to happen

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Forage planting & conservation

=

investment into more milk sales

=

need for business services

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Indonesia – improving (feed) resource efficiency & reducing environmental impact in land-scarce farms

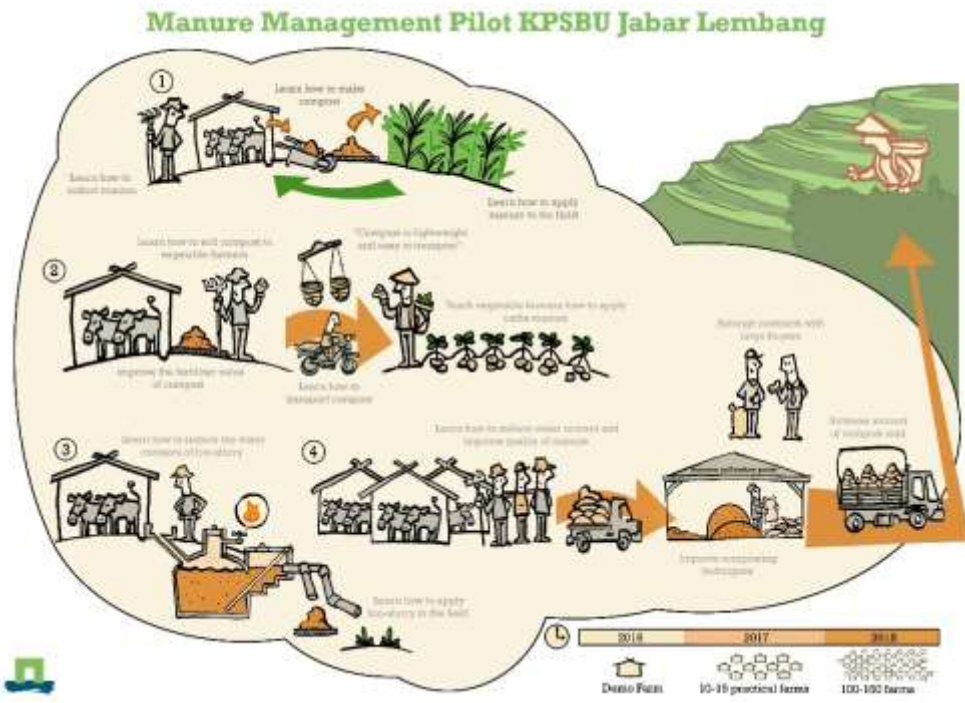
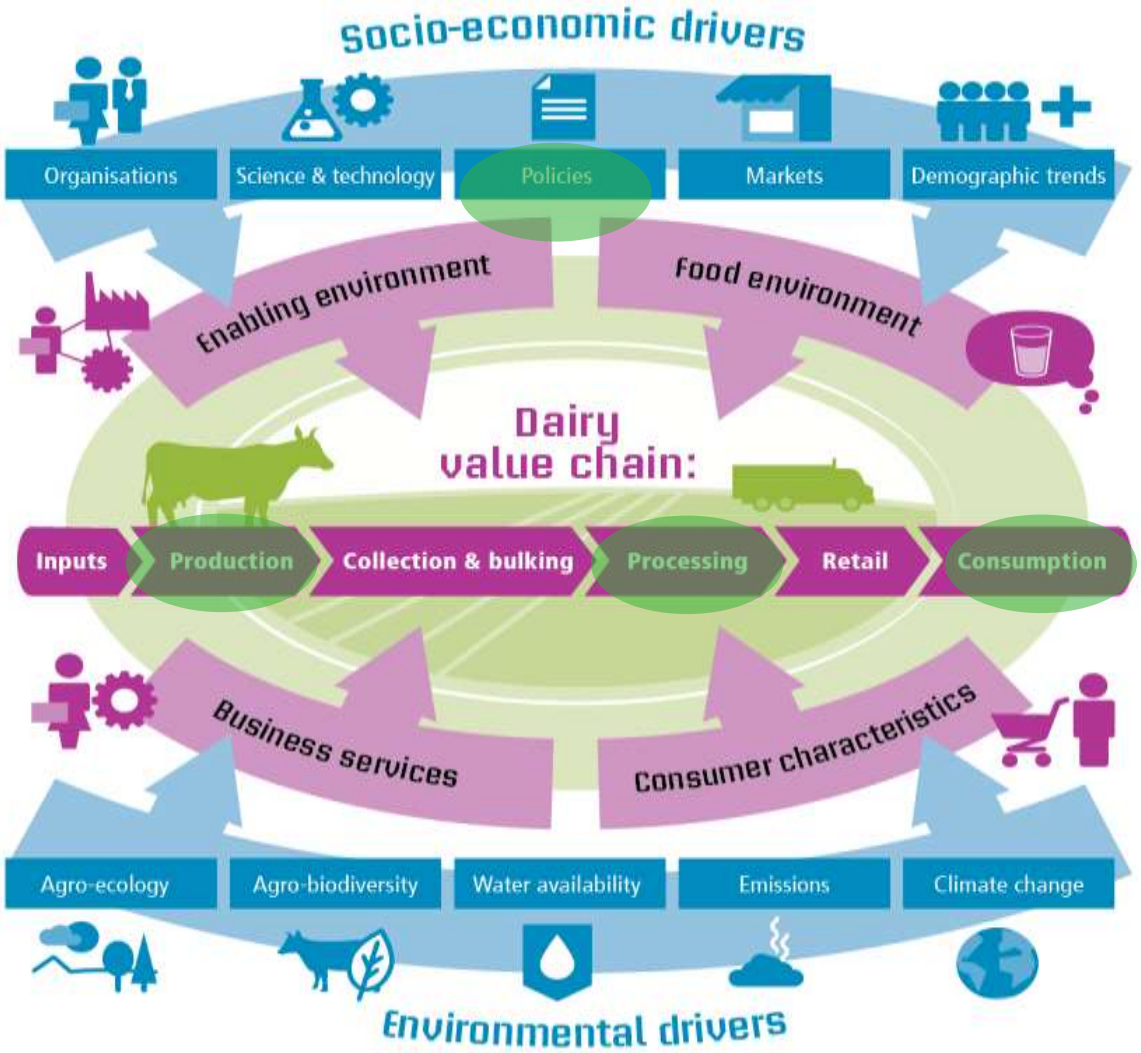


Photo Copyright Nutreco/ Trouw Nutrition Indonesia



Food system outcomes

- healthy food
- gainful employment
- sustaining the agro-ecological base

Using a food systems approach for the dairy sub-system

Farming system is multifunctional

Food system outcomes

- healthy food
- gainful employment
- sustaining the agro-ecological base

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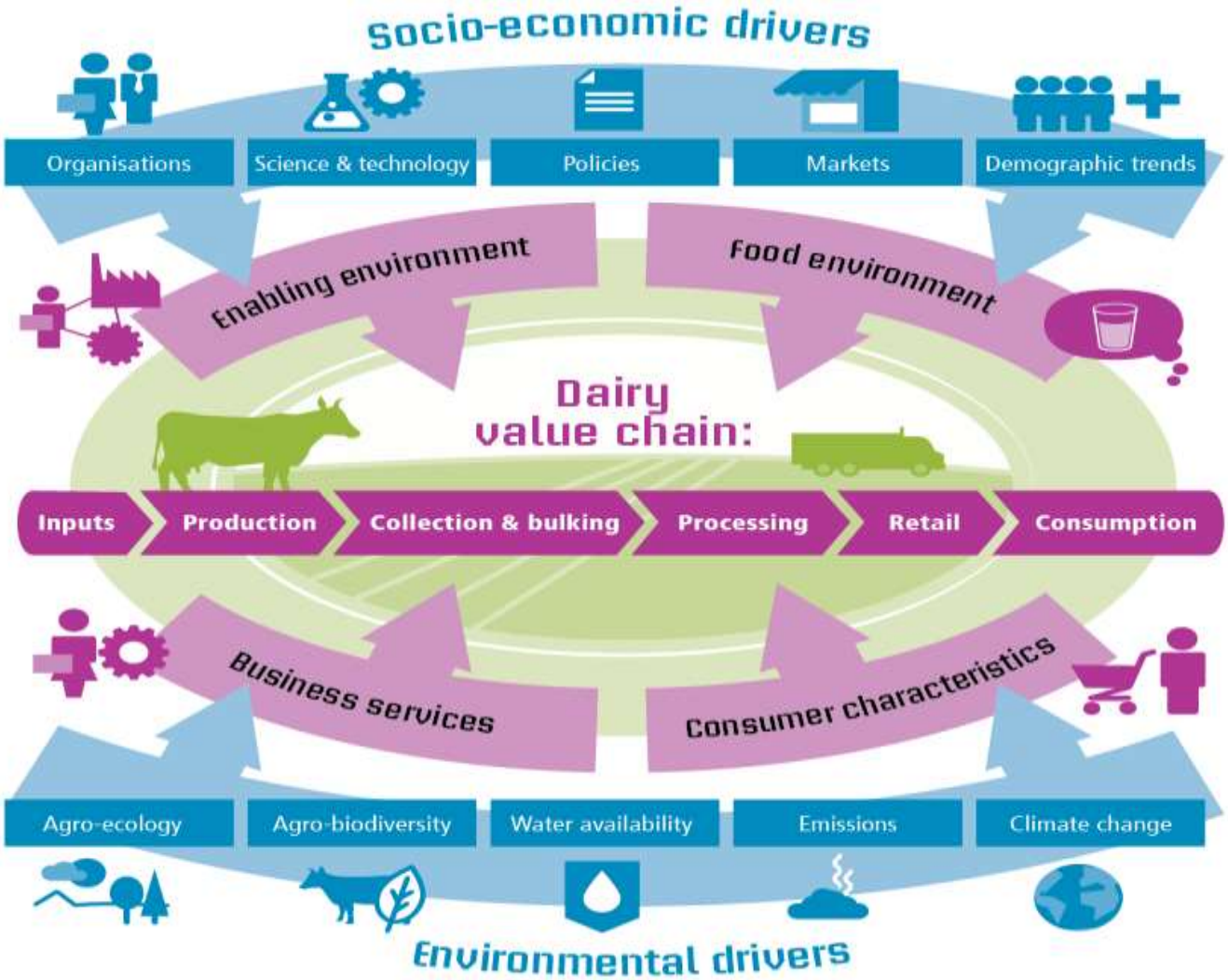

Food system outcomes

- healthy food
- gainful employment
- sustaining the agro-ecological base

Large farms and dairy development – Asia

• 1,000-40,000 cows • vertically integrated supply chain
• state of the art • mechanized forage or sourced from smallholders
• large investors • politically well-connected
• sustainability risks externalized

DDD interest: B2B

What dairy farm types should DDD invest in?

Both small- and medium-scale farmers have limited access to:

- **Land** – high purchased forage-/production costs; manure management issues
- **Finance** – capital from other business – limiting upgrading
- **Business services** – affecting productivity, access2markets

Repercussion for DDD interventions:

- Interventions in smallholder systems to go beyond productivity and access2markets – cover *business services, enabling environment, environm.impact*
- Interventions in medium-scale farms need in-built *strategy for scaling to smallholders*
- Invest in *resource efficiency* (feed-manure-soil nutrient cycle) and in *market access for remote areas*

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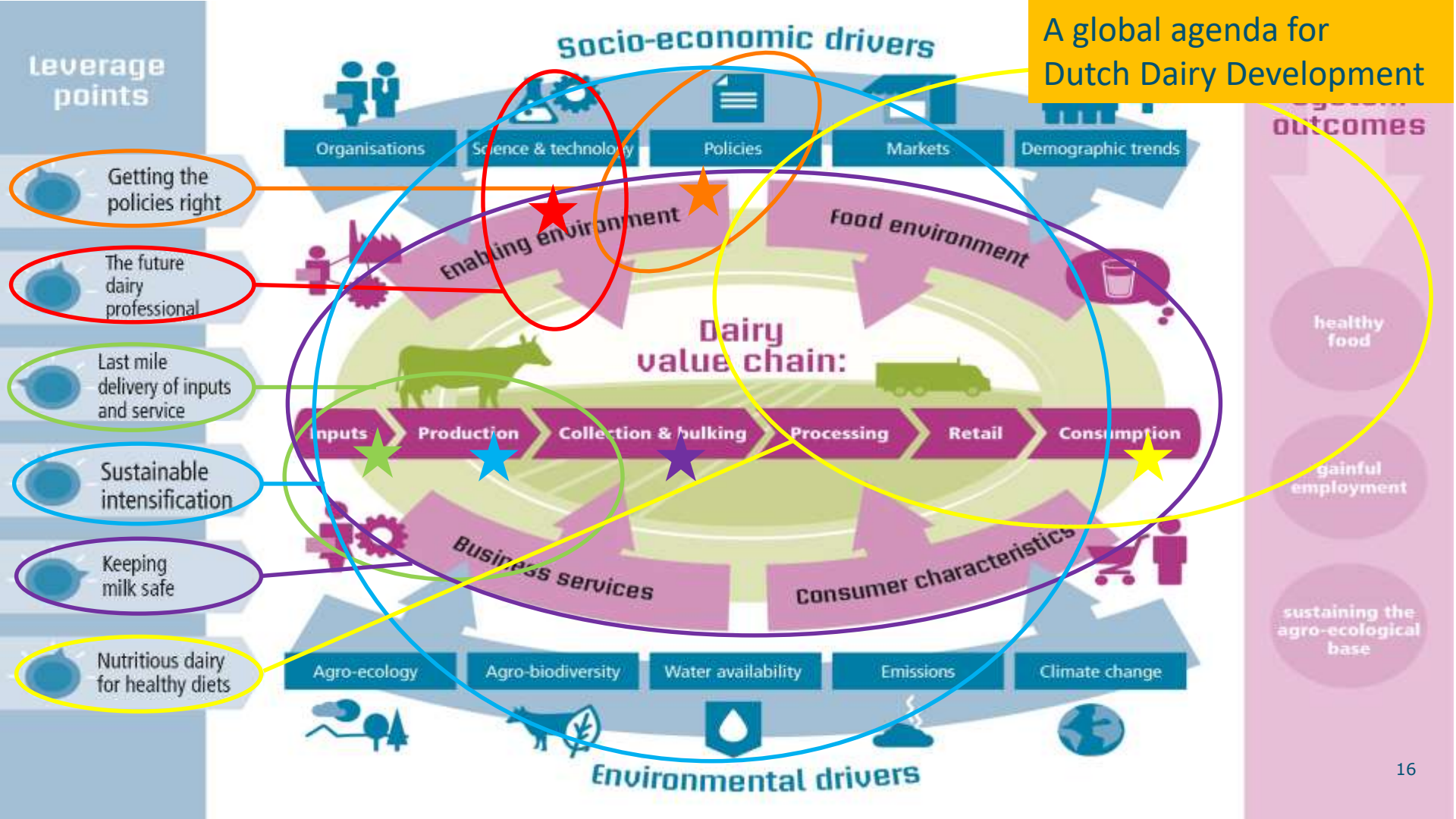
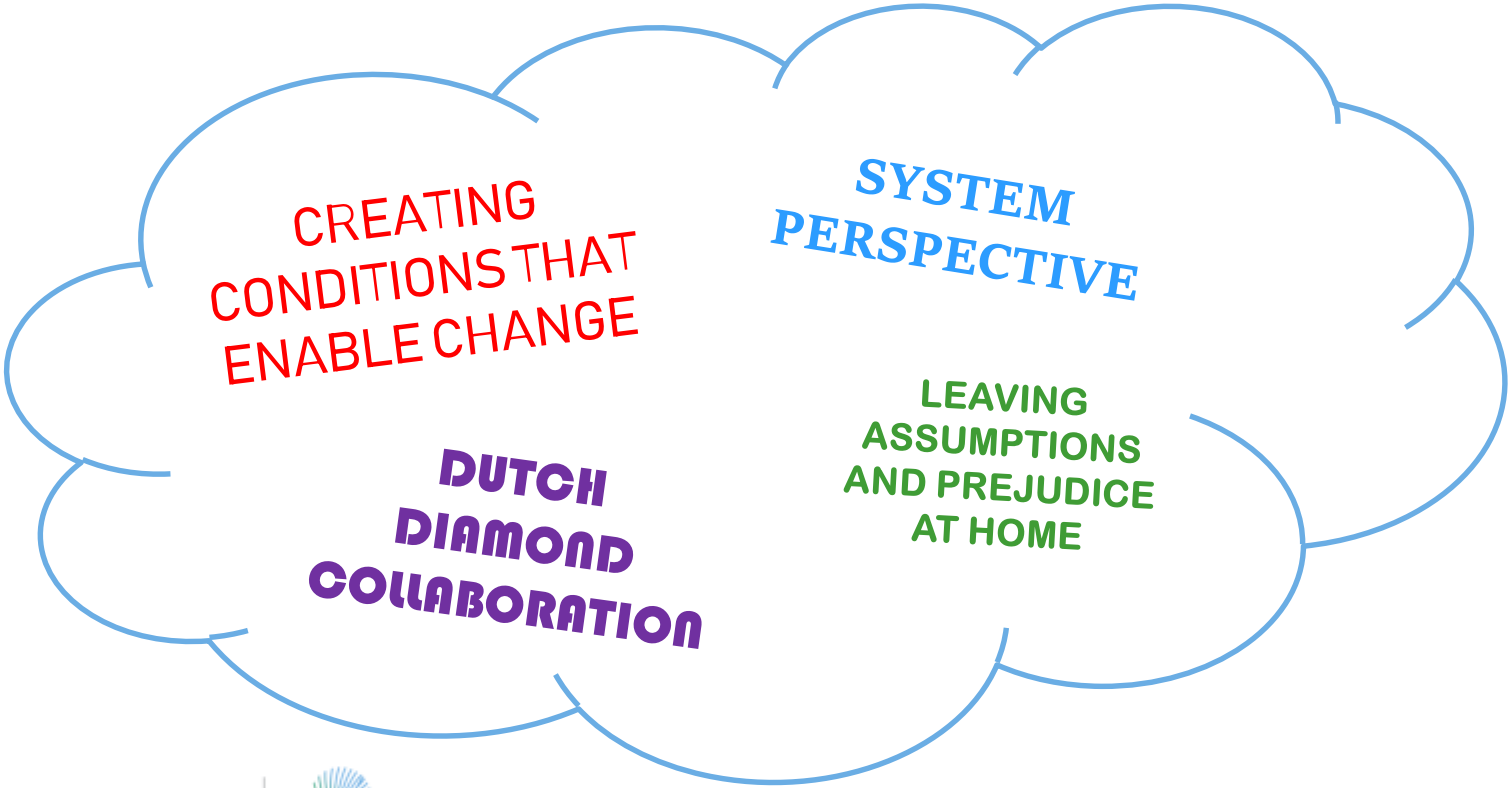
A global agenda for Dutch Dairy Development



Some reflections on Dutch dairy development



Thanks and enjoy the discussions today!

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Sustainable dairy development

Corina van Middelaar

Simon Oosting

Animal Production Systems group, Wageningen University




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100years

Functions dairy cattle

Production

Milk

Meat

Manure

Non-production

Landscape

Draught power

Savings

Nutrient cycling

Water cycling

Carbon sequestration

Biodiversity

.....

Contribution livestock

~32% land

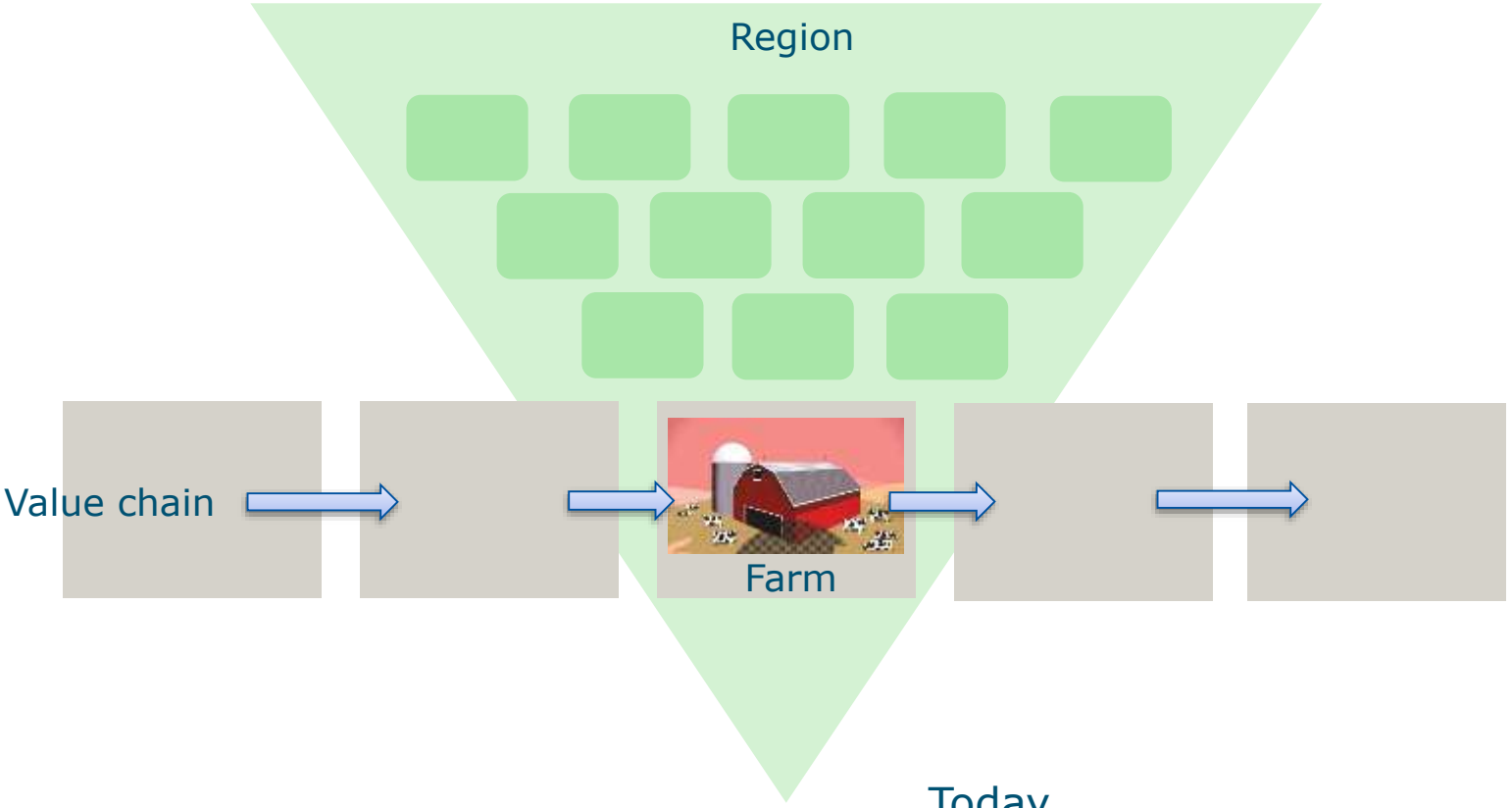
~20% water withdrawal

~15% greenhouse gases

~45% eutrophication

Poore and Nemecek (2018)

Farm, value chain or region?



Today

Eutrophication

Greenhouse gas emissions

Conclusion

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100years

Eutrophication

Excessive and inefficient use of N and P

- Change composition of ecosystems

- Vegetation damage, loss of biodiversity

- Contamination of drinking water

Citarum river

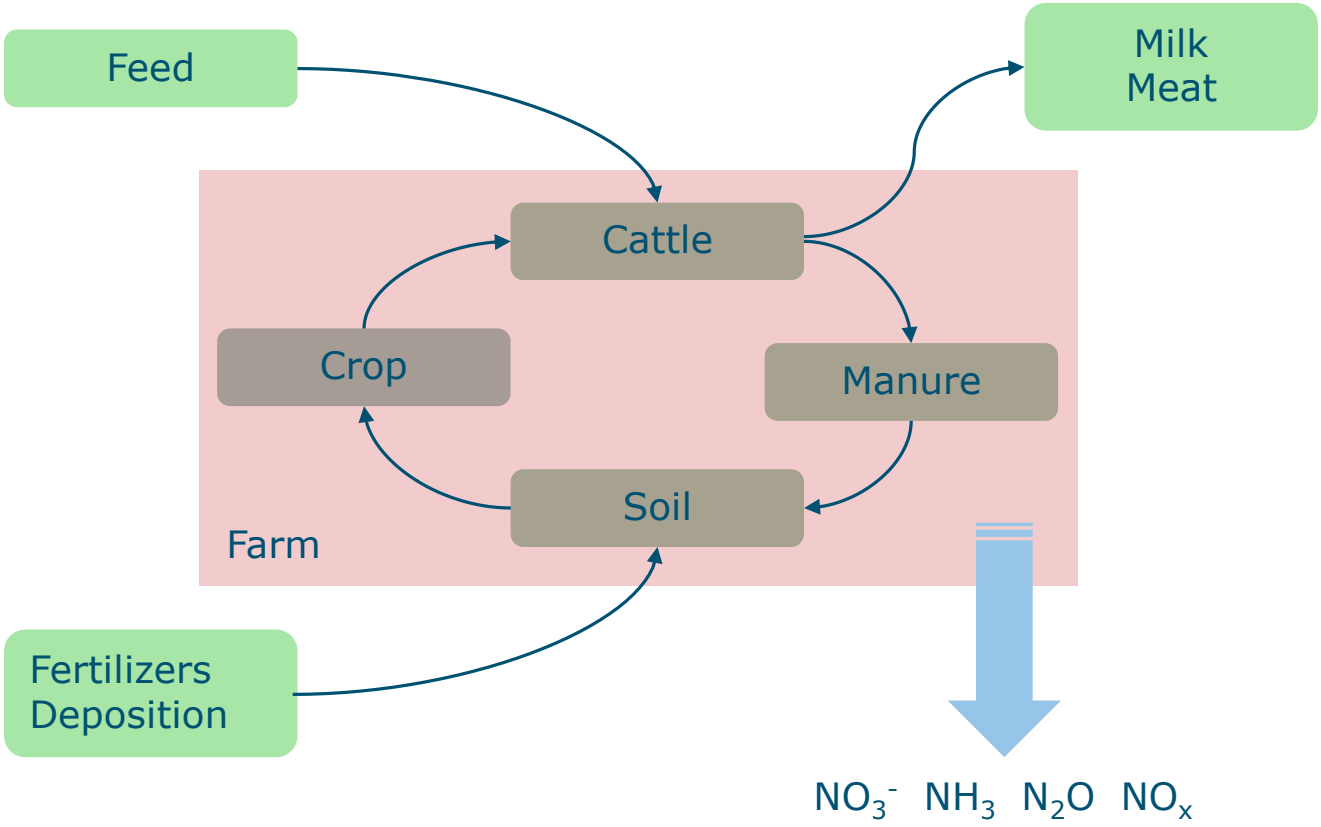
Percentage of dairy farms per type of manure management system in Lembang, Indonesia

Manure management	%
Discharged manure	74
Land application	10
Anaerobic digestion	9
Selling to crop farmer	4
Other	4

De Vries et al., 2019

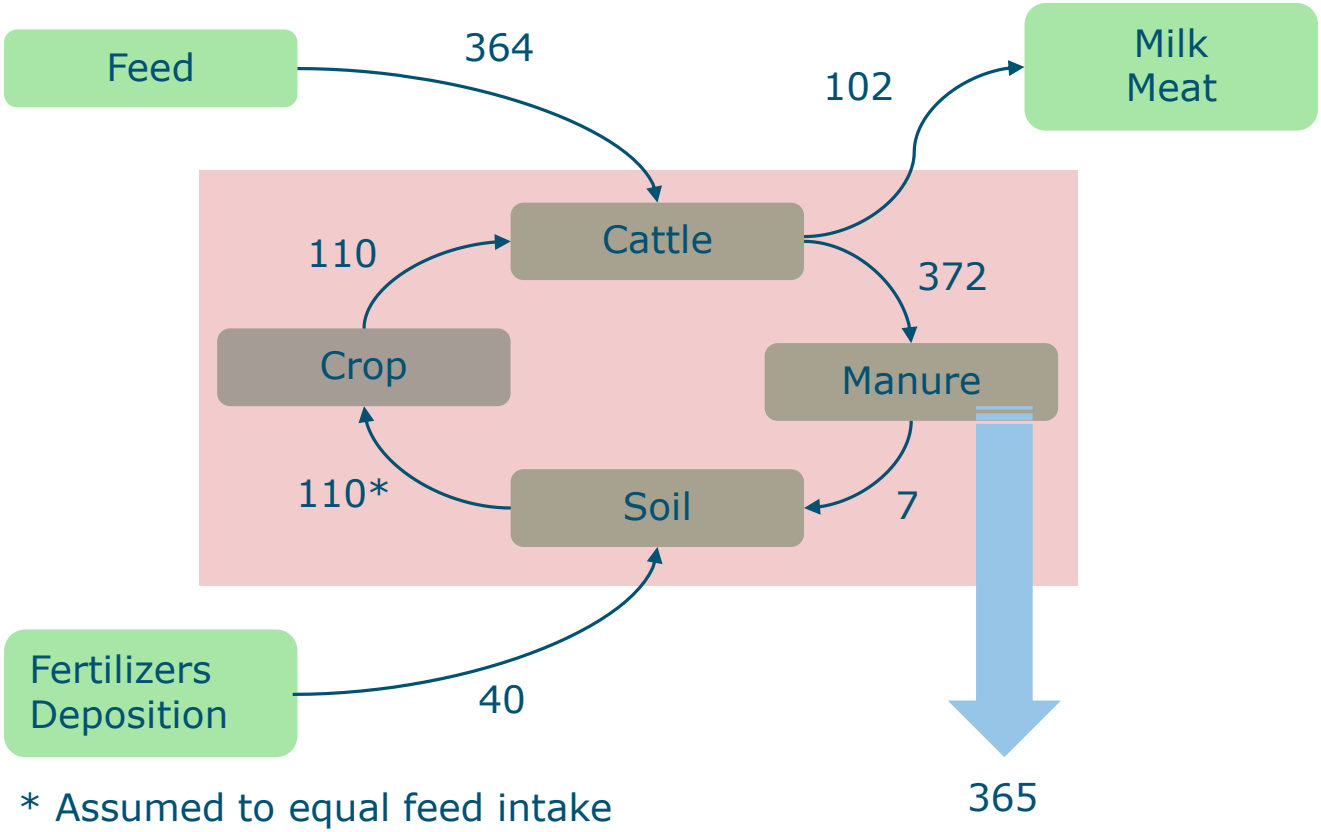
Eutrophication

-nutrient flow analysis farm level-



Eutrophication

-nutrient flow analysis farm level-

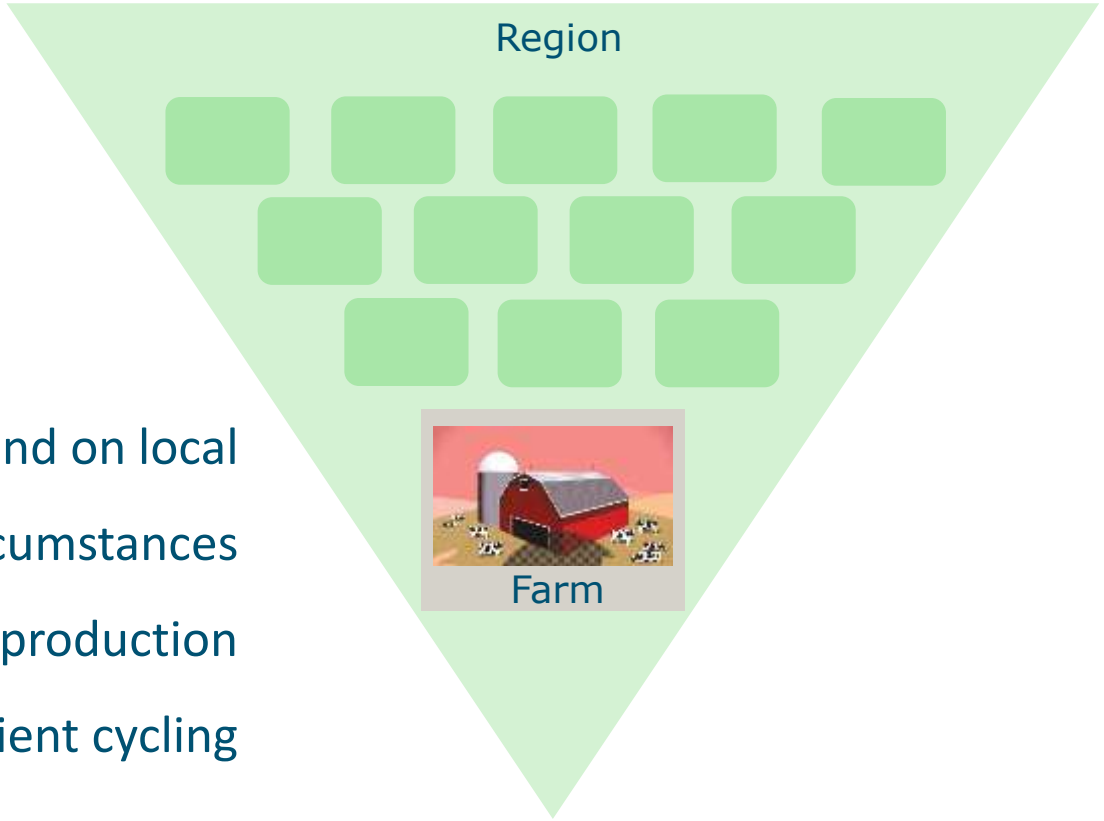


Nitrogen flow analysis (kg N/farm/yr) of dairy farms without manure management system, in Lembang, Indonesia.

Al Zahra et al., in prep

Eutrophication

-nutrient flow analysis regional level-



- Environmental impact depend on local circumstances
- Recouple animal and arable production to improve nutrient cycling

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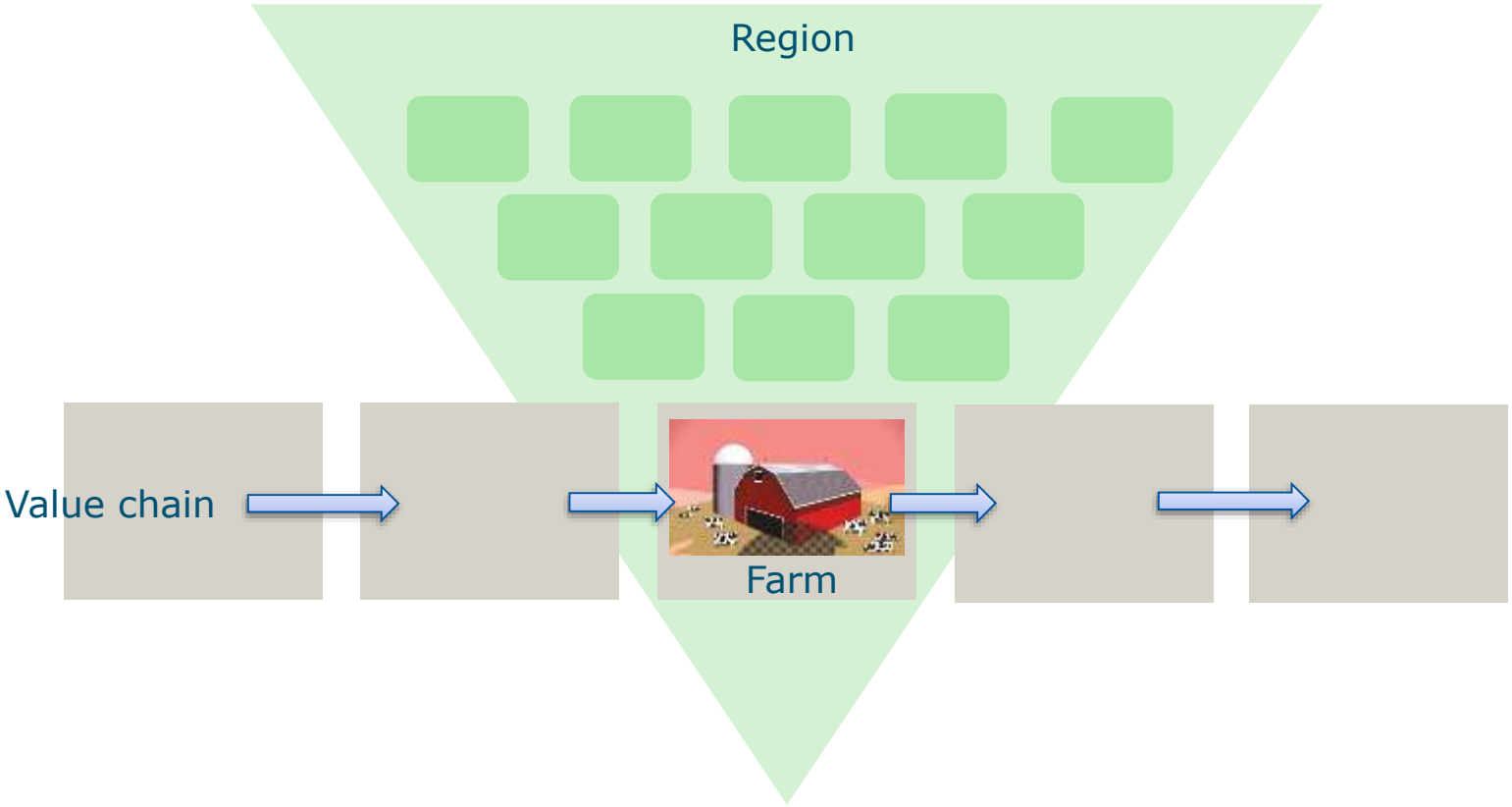
100years

Greenhouse gas emissions

-chain level-



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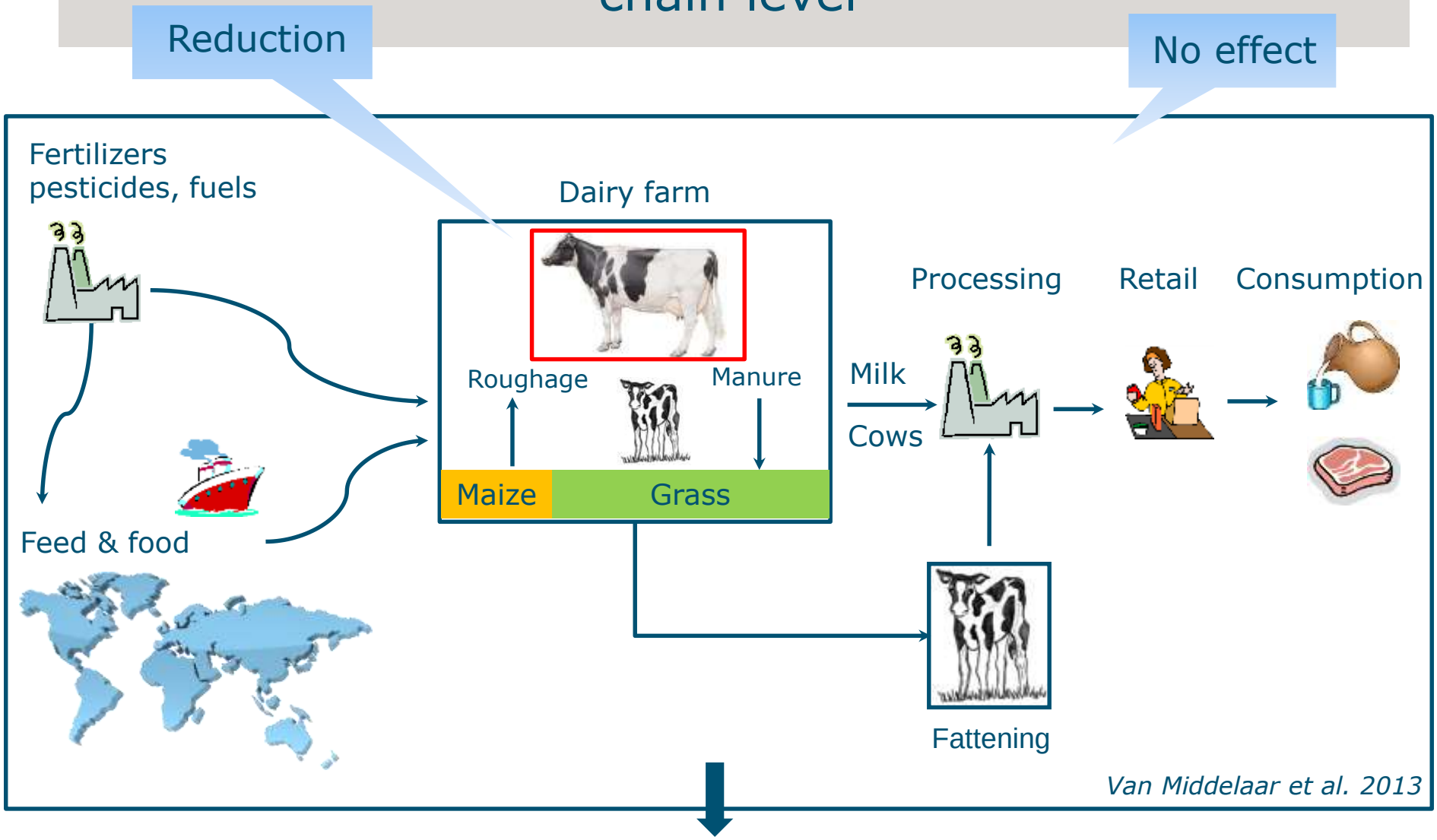
100years
1918 — 2018

Greenhouse gas emissions

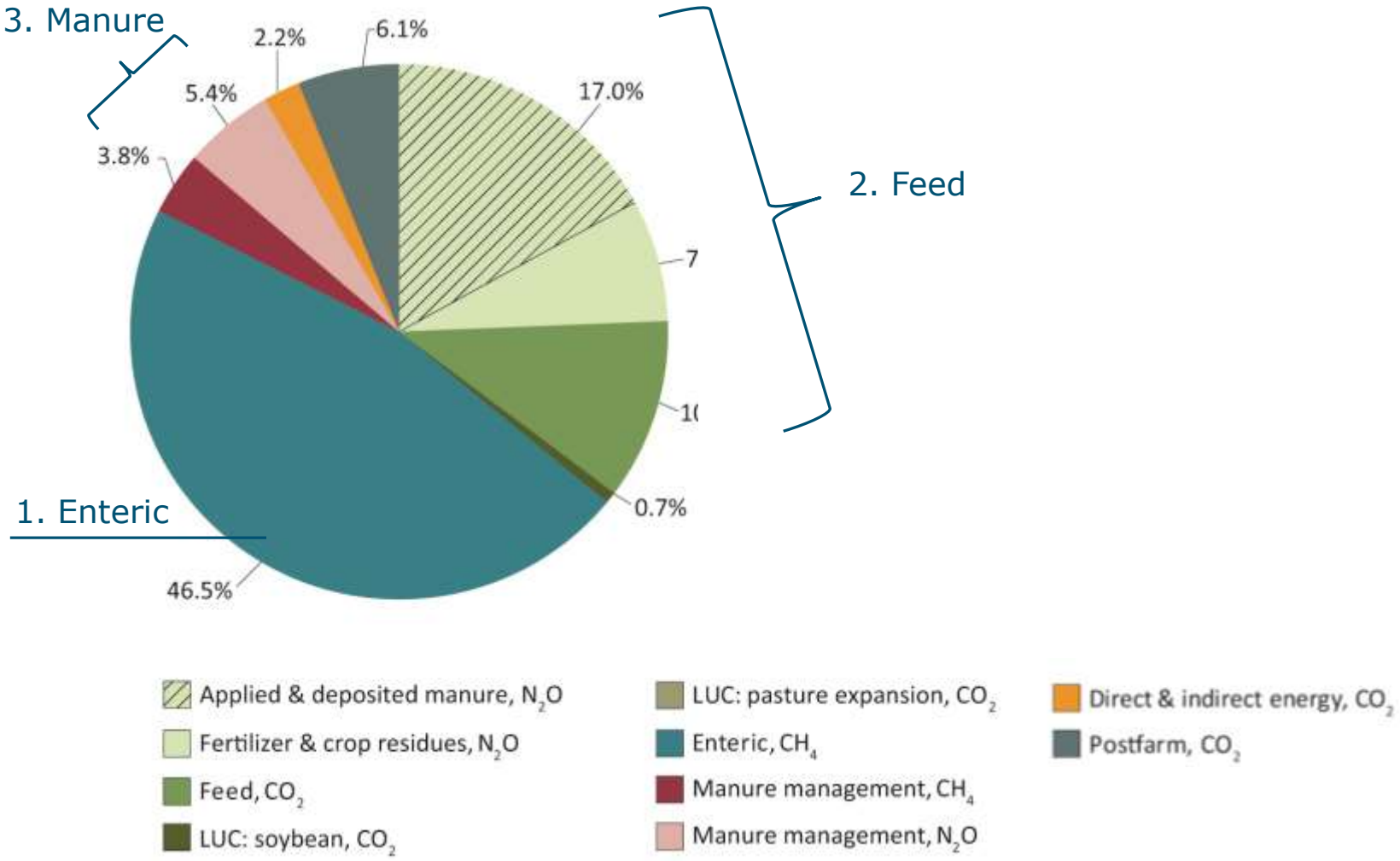
-chain level-



$$CO_2\text{-eq: } 1 \times CO_2 + 28 \times CH_4 + 265 \times N_2O$$

Greenhouse gas emissions

-contribution of life cycle stages-



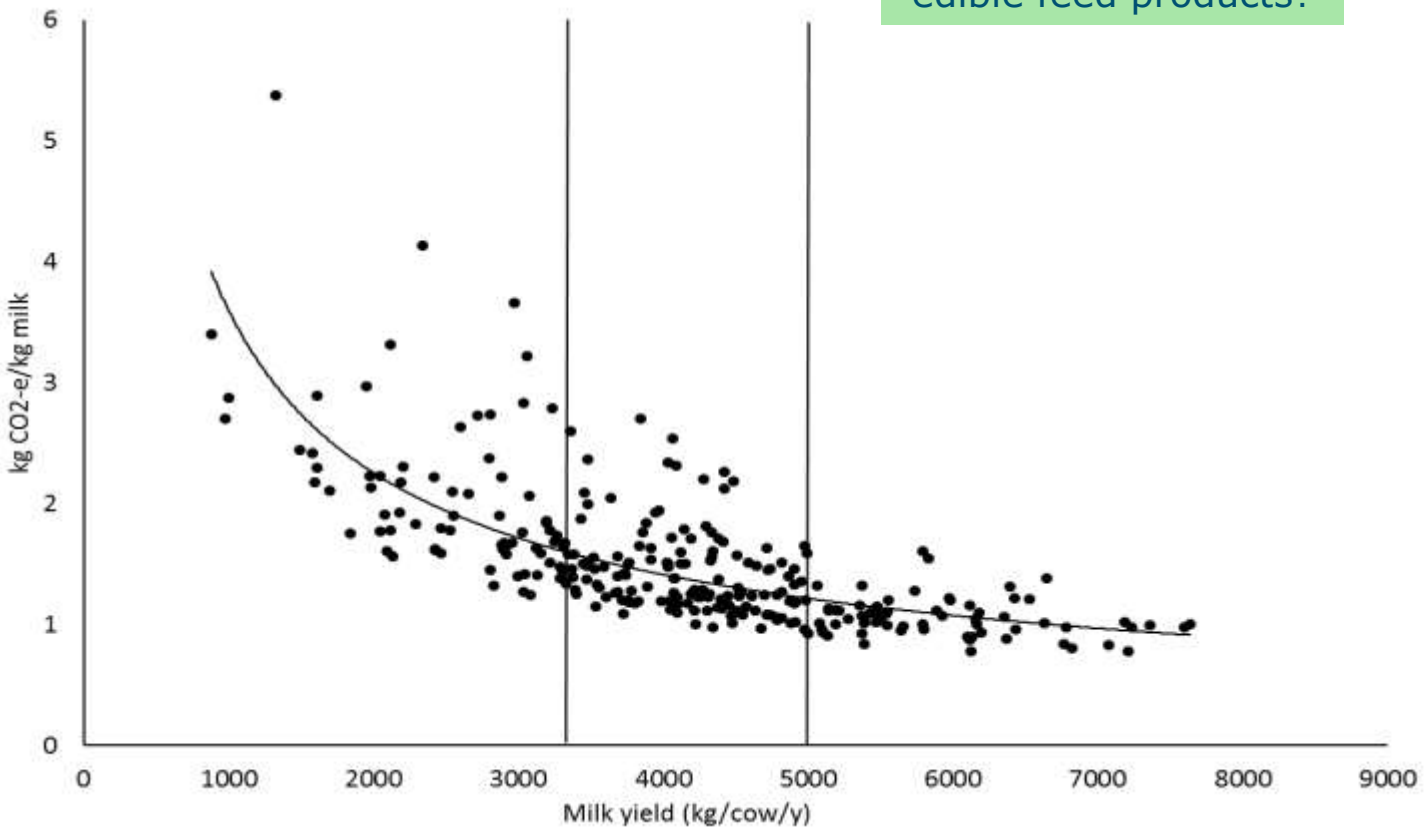
Gerber et al. 2013

Greenhouse gas emissions

-improving animal productivity?-

Multi functionality?

Increase use human edible feed products?



Milk yield and greenhouse gas emission intensity of 283 dairy farms in Lembang, Indonesia.

De Vries et al. 2019

Short coming chain approach

Optimizing value chain ≠ Optimizing food system

Prevent food-feed competition:

animals to value biomass streams inedible for human

Not just about GHG emissions per kg milk, it’s the total sum

that counts!

Conclusion

Reduce environmental impact: acknowledge interaction farm, value chain, region & food system

No regret solutions

- Minimize nutrient losses, improve nutrient cycling
- Prevent soil degradation (also preserves soil carbon!)
- Consider food-feed competition → optimize use of by-products (improve quality, breed for animals that use by-products more efficiently)
- Reduce number of non-productive animals (multi-functionality!)
- Minimize fossil fuel use

Thank you for your attention!

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Nutritious dairy

1. **Onderwerp & doel sessie**

Nutritious dairy
Goal: Come up with 2 or 3 investment ideas

2. **Namen sprekers, moderator & verslaglegger**

Facilitator: Saskia Osendarp (Micronutrient Forum), Input for discussion by Diane Bosch (WUR-CDI) and Herco Hekking (Ante BV), Reporter: Julia van Middelaar

Participants: Kees (Heifer), Hans (PUM, Heifer), Wim (APF), Ekiya Aikins (VHL student)

3. **Key take-aways introduction speakers**

Diana Bosch (WUR-CDI)
Different food patterns around the world, dairy not always included in (traditional) diets.
Food systems; Diet safety, quantity, quality. The triple burden of malnutrition is characterized by coexistence of undernutrition, micronutrient deficiency and overweight If look at dairy, look at triple burden.
What is actually nutritious? Dairy = High-quality protein, potassium, calcium, vitamin A, D, E and B12 and other micronutrients. (milk main source of calcium in Dutch diet) Included/classified as (healthy) dairy: Milk, powdered, hard cheese, soft cheese, kefir, yoghurt,. Not included: Butter (mainly fat), cocoa drinks, ice cream, packaged yoghurt (sugar- sweetened often only 6% milk), condensed milk, tea or coffee with milk. classification what we include and not include. Ensure that we try to limit of high sweetened products (obesity and overweight).

Target groups (1000 days): Children under five (breastmilk first, milk only after 1 year) Pregnant women, Adolescent (full in development), elderly (growing concern, vitamin D deficiency going up), WRA (women of reproductive age)

The EAT LANCET rapport : What is healthy and what can you produce? Dairy below halfway what is possible and healthy to produce (red meat and starchy vegetables are above limit). (consumed versus what is needed for health)

Q: Lactose intolerance is not taken into account (idem for other food allergies).
The WHO advises 250 grams of milk/day. For some, intake is too low. In case of obesity, the link to dairy may be in sugar sweetened dairy beverages.

Herco Hekking (Ante BV)
What can you do with milk and how to commercialize it? Herco's company has the knowledge and the technology. Ante aims to work with business partners in 15 countries and supply technology with training and maintenance and repair service. The need for dairy technology is clear in an example from Bangladesh with poor roads, inundations of cowsheds, high temperature, high humidity (= bacterial growth). Quick cooling and pasteurization is key. As few people have money to buy processed dairy products, it is advised to work along short chains. Collect milk, heat it up, cool it down and sell it).
The advised equipment for farmer: a steel bucket, stainless steel can and filter, which are easy to clean preferably at the collection centre.

Q: Should we get rid of filters? As they may harbor bacteria and become a source of contamination. There is no agreement on this. We do agree that stainless equipment is best, easier to clean than plastic.

Samenvatting discussie

Dairy is fantastic source of income and urban and middle and high incomes, substitute for fish or meat. For poor and/or lactose intolerant consumers, nutrients are more expensive than beans and peas. It makes sense to sell your milk and buy other food items back, for example eggs. There may also be evening milk available at the farm, impossible to sell at night. One stated that milk is an expensive way of drinking water and milk production and consumption in poor(er) regions is not a good idea.

Dairy farmers and consumers are different groups: farmers may make money, but that does not necessarily lead to more nutritious diets for them. A priority is to ensure women get the milk money. Women do a lot of work. It is a social problem.

The Ethiopia dairy program Bridge includes a nutritionist and nutrition activities. It ensures the right messages for each actor in the value chain. There is a balance in promoting dairy consumption, for example when it comes to cheese high in fats. It is recommended to keep the nutrition message close to what they are used to. If the pattern is yoghurt, why promote school milk?
Other critical issues are about milk in baby food and breast milk substitutes. In poor households these products are expensive and a risk in its use. There are reputation risks for the entire dairy sector related to the communication/propagation of these products.

Some nutrients in milk are important, but milk is not essential as there are alternatives in diverse diets. No dispute over that well-nourished > better school results > better entrepreneurs. The point is about affordability for low-income consumers, including the producers of milk.

4. Conclusies van de sessie en aanbevelingen

1. Dairy development programmes (DPSs) should include nutritionists.
2. DDPs should facilitate the option to sell milk and buy nutrients back.
3. Keep product development close to local acceptable dairy products.

Session B - Notes session ‘Keeping Milk safe!’

1 Subject & goal session
Subject: Keeping milk safe!
Goal: What is the key in improving milk quality? How to build and implement a system for continuous improvement of quality?

2 Names speakers, moderator and reporter
Speakers:
- Martin de Jong - Bles Dairies - on quality assurance in Indonesia and Uganda
- Annabelle Daburon - WUR CDI on quality milk in Egypt Moderator:Toon Keijsers - HAS Den Bosch
Reporter: Sjors Bijen - AgriProFocus

3 Key take aways introduction speakers

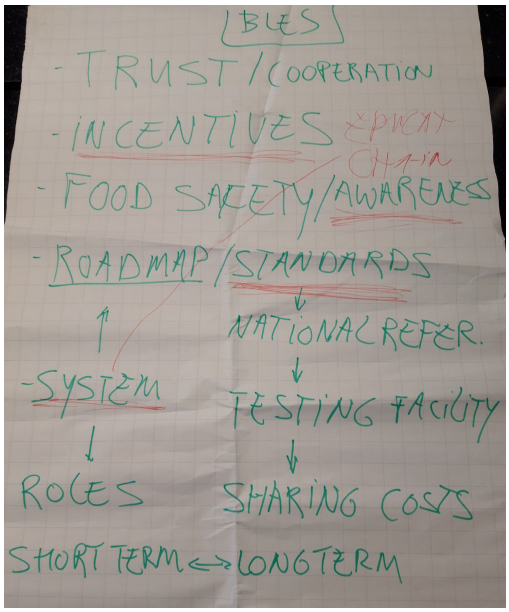
Martin de Jong (Bles Dairies) shared two examples of success stories of milk collection. One example was a high-tech milk collection centre (investment: 250.000 USD; capacity: 12.000 L milk per day) in Indonesia (Los Cimaung) by Friesian Flag Indonesia. The other example was setting up a Quality Based Milk Payment System (QBMPS) in Uganda (investment: 3.000 USD). Annabelle Daburon (WUR CDI) shared a non-success story about the DEEP (Danone Egypt Ecosystem Project); a project promoting and replicating sustainable quality milk collection from smallholder farmers at the borders of the river Nile in Egypt.

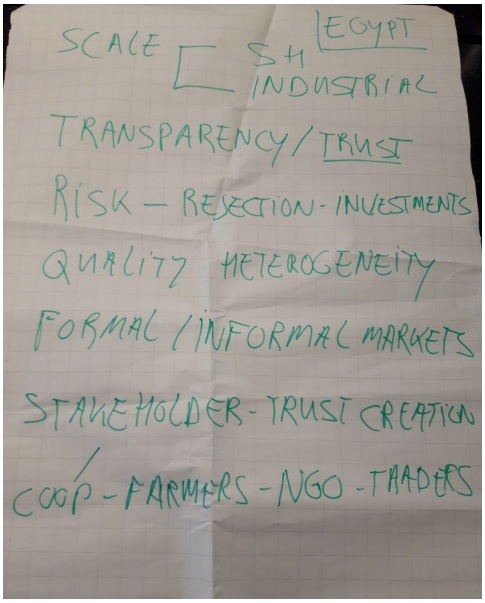
Key take-aways shared by the speakers were:

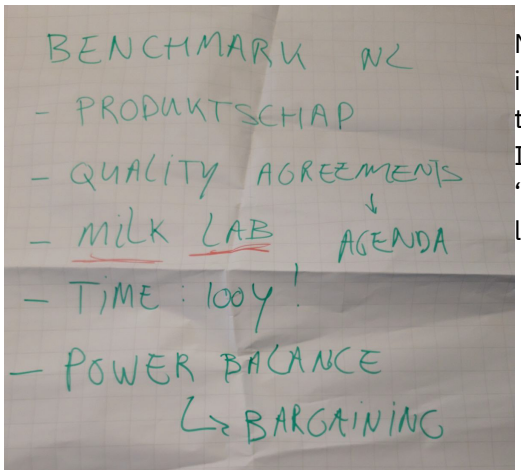
- Trust building - all involved in milk quality improvement, such as producer, purchaser and customer should trust (and work) together to improve milk quality
- Milk quality is driven by money - for success (improved milk), the extra steps taken to achieve improved milk quality, should be paid
- Milk quality costs extra money - capacity improvement and training of staff is needed to improve milk quality. Costs need to be shared among different (value chain) actors.
- Transparency in milk quality test results / standards - this will lead to trust and applying practices to improve milk quality. Suggestion: Set up a national reference lab.
- Milk quality management should focus on improving quality and dealing with the milk quality heterogeneity
- Farmers and milk collection centre should not bare alone the rejection risk.
- Side effects on milk quality in a terrority when high quality milk is channeled outside via large diary enterprise

4 Summary discussion

The next two sheets summarize the discussions after presentations by Martin (Bles) and Annabelle (WUR CDI on Egypt). It is noted that both cases have the same success factors: trust among chain partners, transparency on how to test and what to do with results.







Next, a discussion took place about milk quality improvement in the Netherlands; the summary of discussion is shown on the following sheet.
It was the government plus the dairy sector (in the 'productschap') who started the quality improvement process long time ago.

5. Conclusion of sessions and recommendations

It was a very lively debate. The following two statements have been prepared for the plenary panel.

(1) Participatory approach to define standards accepted by all stakeholders

(2) Kickstart implementing quality based market price system (QBMPS) by processors

Report of Session C – Sustainable intensification 27 November 2019

1. Subject: Sustainable intensification in the dairy sector

The objective of this discussion is to come up with two main investment priorities.

2. Names Speakers, moderator and reporter

Speakers

- Robert Baars, VHL University on climate smart dairy in Ethiopia and Kenya
- Gjalt De Haan, Canterland Agro-Contracting on commercial services for fodder conservation in Kenya

Moderator - Simon Oosting WUR

Reporter - Mahder Akalu APF Ethiopia, additions Simon Oosting No of participants 20 (+ the 4 above)

3. Summary discussion

The moderator set the stage by defining the principles of sustainability for livestock.

The 1st presentation elaborated on these principles by comparing Ethiopia, Kenya and Netherlands for milk chain, breeds, feed, use of manure and CSA practices.
Technical drivers on breeding, feeding, and manure practices have been poorly scaled-up among smallholder dairy in East Africa. And when scaling is successful, it is at the expense of the environment.

The 2nd presentation elaborated on commercially producing fodder where that is cheaper and transporting this to peri-urban dairy producers. A technical issue is the required mechanization for scaling fodder production. In densely populated Ethiopia, additional problems are the availability of productive land and finance. With regard to the sustainability principles 4 and 6, this model may also cause local excess of manure.

The questions for debate was “is it logical to produce milk inside the city?” It may be better to organize fodder production and milk production and processing outside the city and transport dairy into the city. Transport of high value milk makes more sense than transport of low-value and bulky items such as manure and fodder. So logistics are crucial, but the place of production is also fundamental.

The participants in this session referred to experiences like TIDE Oeganda en (longer ago) Operation Flood project in India where cooperative milk marketing was successful in areas further from cities: production increased and farmer remained loyal suppliers to their coop. Small-scale zero grazing dairy production in the city has no future in the long term for reasons of environment, health/sanitation and animal welfare. So that should not be an investment priority. In all emerging economies, a large share of milk production is using informal market channels to reach the consumer. In formal market channels, processors have a steering role.

Investments in sustainable dairy development should take environmental and social sustainability issues into account. Regarding environmental sustainability, session participants concluded that priority should be given to investments that couple livestock to land which implies that no priority should be given to peri-urban production, where forage (both from fodder

crops and crop residues) availability and manure application are limited by land scarcity. Hence priority should be given to investments in dairy development in rural location where land is available. Coupling of livestock to land can be within farms, but also between farms on a regional level: manure, forage and crop residues can be traded among farms. Long distance transport of bulky products such as forage and manure should be avoided, whereas transport of rurally processed milk and milk products to urban markets seems more efficient and sustainable. Regarding social sustainability issues, investments in dairy development should be such that women, youth and poor are included in the development process. Market orientation often reduces inclusion of these groups.

4. Conclusion and recommendation
    - Dairy production should be linked to the land
    - Inclusion of Women
    - Investments feed system, forage, fodder, manure and soil management should be included in terms of circular economy

Netherlands East Africa Dairy Partnership

The Netherlands East African Dairy Partnership (NEADAP) offers a platform for exchange of knowledge and experience to tackle current challenges and leverage further development in East African dairy. NEADAP core partners are Agriterra, SNV, Solidaridad and Wageningen University & Research (WUR), each with their own knowledge, expertise, networks, local partners and projects in East Africa.

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