

CASE STUDY

GRAZING PAYMENTS IN DAIRY FARMING (THE NETHERLANDS)

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1 Introduction: What is the case study about?

1.1 Dairy production in the Netherlands

Global demand for dairy products is increasing, especially in emerging economies in Asia. It appears that milk consumption per capita in urban areas is higher than in rural areas, showing that as more people move into urban areas, overall dairy consumption will rise. This is supported by increase urbanization and changing diets across the globe.

According to the 2015 Rabobank vision on dairy farming in the Netherlands ('Milking in balance') the Dutch dairy sector has a strong position on the global market, both with respect to quality and sustainability. Global milk prices have been highly volatile in the past decade and the abolition of the CAP milk quota regime in 2015 has given incentives in the Netherlands to increase milk production. Wholesale milk deliveries to dairy processors in the Netherlands during June 2016 was some 50 million liters above that of June 2015. This is equivalent to an increase of almost 5% (Eurostat, 2016). This was far beyond increases in other EU Member States, since total milk production in EU-28 during this period dropped by 200 million liters. The Rabobank in her 2010 study 'Anders Melken' ("Other Milking") projected milk production in the Netherlands by 2020 will increase by about 20% compared to 2010.

Grazing is a main feature of dairy farming in the Netherlands and an important public service of the dairy sector (RLI, 2011). This feature is widely appreciated in the Netherlands and consumers elsewhere. At national level, some 70% of the dairy cows are part of grazing systems (Figure 1).

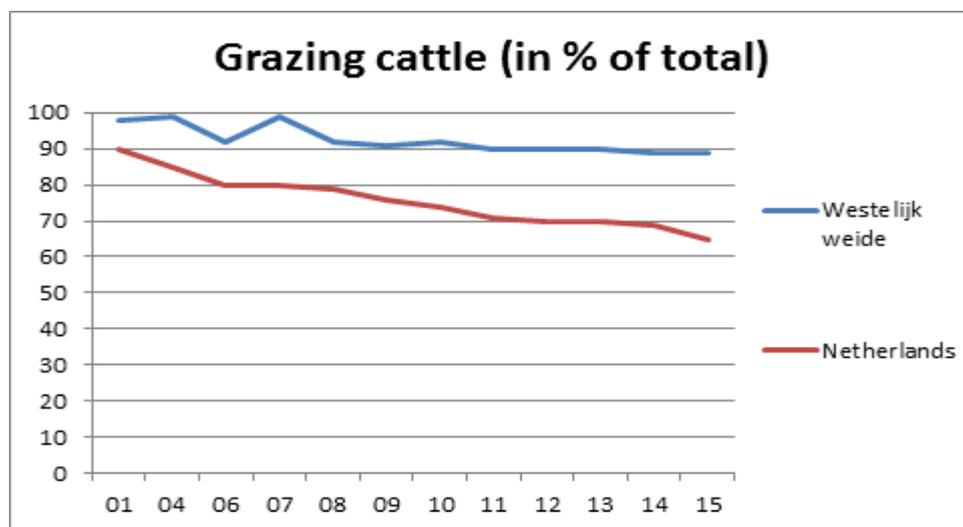


Figure 1: Grazing of dairy cattle during the period 2001-2015 in the Netherlands and meadow region in the western part of the Netherlands.

Source: CBS (2015), Sustainable Dairy Chain (*Duurzame Zuivelketen*).

The highest shares of grazing dairy cattle are found in the peaty areas of the provinces Utrecht, North Holland and South Holland. Grazing is widely used for marketing purposes by the milk

processing industry. So-called meadow farm milk – milk that originates from cattle with grazing - is processed into meadow dairy products, like fresh milk and cheese, and distinguishes itself from in-house production systems. And although the dairy industry does not want to lose the credits from society that are also attached to meadow farm milk, there is a declining trend in grazing, which has been stabilized in the recent past (Figure 1).

1.2 The case study: actors and the grazing premium

This particular case study focuses on dairy production in part of the Province of North-Holland (Figure 2). ‘CONO Kaasmakers’ (the most important key actor in this case study) is a farmer’s cooperative operational for over 100 years in this region, mainly producing cheese. The company has some 460 members (dairy farmers, who can also be regarded as key actors), with a gradual increase in supply of milk. The aggregated milk production is 350 million kg per annum, which is approximately 3% of total production of milk from dairy cows in the Netherlands. Annual cheese production in the Beemster polder is approximately 28 million kg of cheese. In addition, ‘CONO Kaasmakers’ has a joint programme with Ben & Jerry on their Caring Dairy programme, enabling to produce ice and cheese milk is delivered from sustainably produced milk.



Figure 2: Case study region in Province Noord-Holland

The company initiated a premium for pasture grazing in 2002. The premium by CONO to dairy farmers for the delivery of meadow farm milk can be regarded, or interpreted, as a particular type of governance arrangement aimed to stimulate animal welfare ('happy cows'), to create an attractive landscape, and to make the most delicious cheese from the best milk. Of course there are other governance arrangements could have been considered to achieve these environmental and socially beneficial outcomes, such as (public or private) command-and-control regulations (e.g. specific guidelines prescribed by the government to the dairy sector, that prohibit the full-time housing of cattle). Recently (February 2017), the Dutch parliament has decided to make pasture grazing mandatory for dairy cattle in the Netherlands. The Secretary of State of Agriculture did respond by launching a research project on ways to stimulate voluntary grazing and the advantages and disadvantages of a legal mandatory system for grazing and alternatives. In addition to this this, (local) government is another key actor in this case study, for instance through its Environment & Planning Act ('*Omgevingswet*').



Figure 3a: CONO production plant

Source: CONO Kaasmakers



Figure 3b: Product quality control

Source: CONO Kaasmakers





Figure 3c: Grazing

Source: CONO Kaasmakers

Each member of the co-operative delivering milk according to the requirements of the Sustainable Dairy Chain (*Duurzame Zuivelketen*) is eligible for the premium paid by CONO. The requirements are an effective monitoring by dairy producers who process raw farm milk. They are responsible for the task of checking on and taking primary responsibility for compliance with the obligation that meadow milk cows are out for grazing during at least 120 days a year and a minimum of 6 hours a day. Pasture grazing is considered essential to reach high quality standards of cheese.

Table 1: Overview of case study

Region or locality	Waterland and Zuid-Oost Beemster
Main Farming/ forestry system	Dairy
Area (UAA) of initiative (& Case Study)	23
Key ESBOs covered	Landscape character and cultural heritage Farm animal welfare Soil functionality Species and habitats
Total no. of farmers/ foresters involved	460
Other key stakeholders involved	CONO Kaasmakers, consumers of cheese, collective and agri-environmental association Water, Land en Dijken; Province Noord-Holland. 460 dairy farmers. UNESCO cultural heritage, visitors in region, municipality
Source(s) of funding	CONO kaasmakers
Start date of initiative	2002
End date of initiative	n/a

The premium payment was introduced by ‘CONO Kaasmakers’ in 2002 at a level of €0.50 per 100 kg of milk, and is on top of the regular milk price. In 2016, this premium was doubled to €1 per 100 kg of milk, and is doubled again on 1 January 2017, to reach €2,00 per 100 kg of milk (CONO, 2016). This premium might have supported in the recent past of stabilizing the declining trend in pasture grazing. Some farmers argued that an early introduction of a premium helped to maintain the grazing culture in this area. This feature does distinguish them from other parts of the country where the share of grazing dropped. As said in the press release (CONO, 2016), the premium is argued (i) to secure a fair price to farmers for grazing, (ii) to acknowledge pasture grazing adds to the taste of cheese and (iii) to increase animal welfare. In general, it can be said that with its increase in scale and the cattle being housed, dairy farming is starting to resemble intensive cattle farming, which is mainly related to the industrialization of dairy farming. CONO and its farmers understand that having cows graze pasture is good for dairy farming’s image. The premium for grazing is embedded in a marketing strategy for meadow dairy products; products that are not only sold on the national market, but also on the international market (e.g. Germany). It helps CONO to differentiate itself in the market. As such, consumers of CONO-products are another group of key actors. Farmers recognize the importance of consumers towards grazing. Farmers also indicated during the interviews they remain to be able to maintain grazing in the near future. They argue that they have a personal satisfaction of grazing cows on their farms.

Farmers appreciate private payment schemes.
It acknowledges product quality and provision of ESBOs.



Some 92% of the dairy farmers who are member of the CONO co-operative adopt pasture grazing, which exceeds national average. Branded cheese ‘Beemsterkaas’ is produced from branded grazing systems. Grass is considered essential for the quality of the product. The size of the parcel near the farm is critical for the pasture grazing. With an average of 50 ha per farm with grazing, the size of the parcel near the farm is some 33 ha. Pasture grazing requires additional labour for milking, but reduces costs for feed and disposal of manure. With an average of 55 kg per day, fodder represents more than 90% of the food of dairy cows. This is complemented with an average of 5 kg of compound feed, and composed of maize, soya and other products. Moreover, a cow on average drinks approximately 100 litre of water, and is fed with 100 grams of vitamins and minerals (NZO, 2016).

Creating high-quality agricultural land was one of the main reasons at the time for draining the Beemster Polder (in 1612). Originally the drained land was used for grain production, but as time went by this land gradually turned into pasture land for cattle. The reasons for this were the fact that the groundwater level and the soil composition produced a less favourable result for agriculture than the investors in agriculture had anticipated. As a result, dairy farming and cheese production quickly developed after the polder had been drained and have since been an integral part of the Beemster Polder.

Since 1999, the Beemster Polder is a UNESCO World Heritage Site in a region which was reclaimed from water during the 17th century (also other polders were constructed, such as the Purmer, the Wormer and the Schermer). Land reclamation is accompanied by seepage and a general shrinking of the soil, which manifests itself in settling. As a result, the region is currently some 3-4 meters below sea level. It is put on this list ‘as a masterpiece created by humans’ with a strict pattern of squares and quadrants.

1.3 Object of the study and four ESBOs are distinguished

The report explores the importance of grazing premium relative to other payment schemes for the provision of environmentally and socially beneficial outcomes (ESBOs) from grazing in dairy farming. The study did focus on:

- a. Relevance of grazing in the provision of ESBO. We distinguish farmers, inhabitants of the region, tourists.
- b. Main trends in grazing and the challenges for grazing in the years to come.
- c. Business-economic of the different strategies for farmers, distinguishing between volatile milk prices, grazing premium, CAP payments (both Pillar I and Pillar II).

A key question remains whether challenges remain that might potentially be addressed in the CAP.

The report draws from literature review and interviews, complemented with data from the national census and the Farm Accountancy Data Network. See Annex 1 for names of persons interviewed.



2 Definition of the social-ecological system (SES) studied

2.1 Figure of the SES, using the revised SES Framework

The social-ecological system framework (SES framework) was largely designed with a view to develop a comprehensive picture of the key interactions among the resource system in place, their drivers, key actors and outcomes (Figure 4). The SES framework is based on and grounded in a couple of expert interviews (including farmers, provincial authority and agri-business) complemented with a literature review. After compiling a first version of this framework, it has guided a couple of interviews in Stage 1 and Stage 2 (with regional dairy farmers), mainly to test how the comprehensive view of this framework is perceived by the interviewees.

We focus on the following objectives to be achieved (and related environmentally and social beneficial outcomes - ESBOs) that a system of pasture grazing delivers are:

1. Protecting landscape character and cultural heritage, with focus on ESBO14: landscape character and cultural heritage, maintaining or restoring a high level of landscape character and cultural heritage. This ESBO is a characteristic of the Resource System.
2. High levels of farm animal welfare, targeted at ESBO18: achieving or maintaining the implementation of high animal welfare practices on farms. This ESBO is connected to the type of Resource Units. It differentiates grazing cows from non-grazing cows.
3. Healthy, functioning soils, with focus on ESBO9: soil functionality, achieving or maintaining good biological and geochemical conditions of soils. This ESBO is part of the Resource Units.
4. High levels of biodiversity, with focus on ESBO11: achieving or maintaining diverse and sufficiently plentiful species and habitats). This ESBO is part of the Resource Unit.

In discussions with stakeholders it has been questioned whether healthy dairy products would be an additional ESBO from grazing. There were different opinions on the importance of soil functionality as ESBO. It is difficult to show the relation between soil functionality and grazing. The consumers express their appreciation for the package of ESBOs through buying dairy products. We did not find evidence that consumers prefer a specific ESBO above others. Cows in the meadow result in so-called cattle-enhanced landscapes; i.e. the dairy cows maintain and improve landscape beauty. It appears that a rural landscape with cows is more highly appreciated (by tourists and residents) than an 'empty' landscape whereby the dairy cattle is kept indoors. In other words, a cow grazing is part of the traditional Dutch landscape and highly appreciated by the people (this is reflected by the fact that a rural scenery with (a herd of) cows are characteristic of Dutch landscape paintings). So, the visibility of cows graze pasture has a positive effect on the appreciation of the Dutch countryside.

Moreover, having cows graze pasture might be beneficial for animal health. Improvement of animal health and animal welfare will lengthen the lives of the animals. Healthy cows live longer, need less medication and have a more efficient milk production.

Given the ever more stringent nutrient management regulations – such as for phosphate – healthy soils are crucial for dairy production in order to produce feed for the animals. Soil



degradation occurs when soil loses its nutrients or its organic matter when the soil structure breaks down (including as a result of erosion), or if the soil becomes toxic from pollution. Grazing animals can be an important factor in maintaining balanced and diverse mineral resources in the soil. Manure, for instance, has an influence on soil life.

Although complex and dependent on farm management practices, having cows graze pasture might also be beneficial for nature. For instance, the degree to which grasslands are suitable habitat for meadow birds strongly depends on the type of manure applied, but generally, it appears that ‘meadow manure’ is beneficial to specific birds such as the black-tailed godwit (see De Snoo et al., 2016).¹ Cow dung attracts larger insects on which the chicks depend for their survival.

¹ The black-tailed godwit is elected as the national bird of the Netherlands, the country in which the vast majority of the West European godwit race breed.



CASE STUDY: Outdoor grazing in the Netherlands

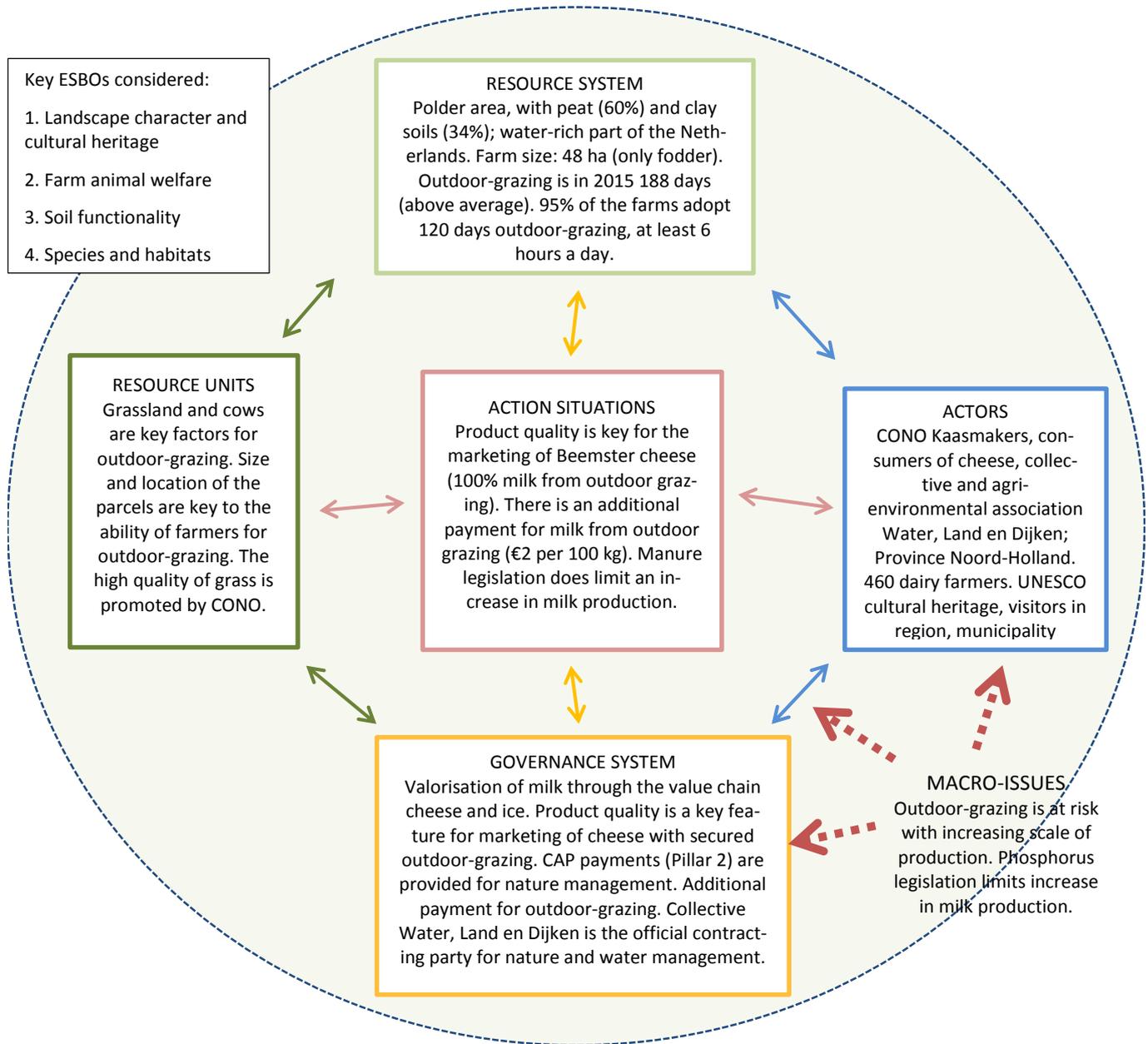


Figure 4

Summary of the SES framework for [NL-1] case study

(adapted from Ostrom and Cox 2010; McGinniss and Ostrom 2014)

2.2 Description of the SES

The grazing premium to dairy farmers is important to acknowledge towards consumers the final products (e.g. cheese) are based on farming systems with grazing for at least 120 days (6 hours a day). The Sustainable Dairy Chain (*Duurzame Zuivelketen*) aims to maintain the share



of the number of farms with grazing (either 120 days per annum and at least six hours a day, or other types of grazing) at the level of 2012 (which was some 81% in total). It reflects the appreciation by consumers and is part of a business strategy towards the national and international market (e.g. Germany). The grazing premium creates synergies with open landscape features.

Landscape features and product quality through grazing are used in the marketing of Beemster cheese. Landscape features have a public good character. Farming practices that include grazing might also be beneficial for animal health. Ammonia emissions in outdoor-grazing are below those with in-house production systems. Although complex and dependent on farm management practices, it might also be beneficial for nature. Grazing is an important management practice in dairy farming. It might also be a way to communicate the broader context of farming in a region (Figure 4).

Grazing and the maintenance of open landscapes are highly perceived by consumers. The future trends of outdoor grazing depend on:

- Number of dairy farms is likely to decline in the years to come, and dairy farms with grazing and without successor might have a large share of those who quit production.
- Market conditions of the quality cheese. The premium for outdoor-grazing increases over time (starting 2017, to be €2.00 per 100 kg of milk) is noticed by consumers of cheese and used in the marketing in the Netherlands and abroad (e.g. Germany).
- Trends in environmental legislation (e.g. to apply fertilizers and organic manure, and eventually dispose excess of manure). The costs of transport of excess amounts of manure could be €12 per m³. Disposal of manure at short distance might cost around €5 per m³, and to amount several thousands of euro.
- Number of dairy cattle per farm. Monitoring and enforcement of grazing systems would require additional ICT technology (e.g. GPS systems) when milk production per farm increases.

Grazing is part of the branding of the products and grass-fed production is considered essential for product quality. Beemster cheese, for example, is secured from grazing systems. There is a trade-off between manure legislation and outdoor-grazing: increasing the scale of production tends to be more efficient with in-house production systems. Compared to outdoor-grazing, dairy producers with in-house production systems tend to be better able to improve the efficiency of feed consumption. This is especially relevant for producers who target to optimise milk production at constant levels (Van der Schans and Van der Weijden, 2016). Environmental legislation is nowadays largely felt to be the new system to limit milk production and replacing the former milk quota regime. Synergies with outdoor-grazing and dairy farming could be achieved when the field parcel is sufficiently large to provide food and fibre. Both the size of the field parcel near the stable and the number of dairy cows are critical for outdoor grazing. Landscape features are an important public good related to outdoor-grazing. Such farming practice might also be beneficial for animal health. Ammonia emissions in pasture grazing are below those with in-house production systems. Although complex and dependent on farm management practices, it might also be beneficial for nature. Pasture grazing is an important



management practice in dairy farming. It might be a way to communicate the broader context of farming in a region.

The trend in grazing is stabilizing. Pasture grazing requires grassland and it largely takes place at field parcels that are near the farm house that also need to be sufficiently large for grazing. The home plot needs to be sufficiently large to enable for synergies of grazing and dairy farming could be achieved when the home plot is sufficiently large to provide food and fibre. This is a key factor enabling farmers to maintain pasture grazing for their dairy cattle. CONO offers training to farmers to maintain and improve grazing. Training includes the implementation of grazing in combination with automatic milking systems (AMS).

There is a trade-off between manure legislation and outdoor-grazing: increasing the scale of production tends to be more efficient with in-house production systems. Environmental legislation is nowadays largely felt to be the new system to limit milk production and replacing the former milk quota regime.

Image is important for the provision of ESBOs. Management of landscapes through pasture grazing systems are important for the image of a region. Pasture grazing is appreciated by the local population, as expressed by media attention. Some farmers also invite school classes to visit their farm and explain the contribution of the farm to the region and beyond.

Labour requirements of outdoor-grazing could create tensions with maintaining open landscape features. Outdoor-grazing requires additional labour for transfer of dairy herds, but reduces some of the labour needs for mowing of grass. Compared to in-house production-systems, outdoor-grazing is more unpredictable and requiring more labour.

Monitoring of outdoor-grazing remains a challenge. Monitoring of outdoor-grazing is currently implemented by CONO Kaasmakers, and the dairy farms keeps track of outdoor-grazing through a calendar. The co-operative visits the farm to inspect outdoor-grazing. In addition, Qlip (quality assurance in agrofood) does perform a selection of farm visits to monitor outdoor-grazing. More advanced ICT technology (e.g. GPS system) could create synergies with the maintenance of open landscapes.

2.3 Levels of ESBO provision, trends and determinants

The ESBOs related to grazing are assessed in indirect way, based on the adoption of grazing systems on dairy farms. Such indirect assessment is needed since no observations are available on the ESBOs distinguished in the case study. In addition, 'landscape character' and 'cultural heritage' are only relevant at respectively the landscape level and society. This is the case because the number of dairy cows grazing should exceed a minimum level in order to be visible for people in the landscape and the number of people viewing graze part of their culture. It needs to be kept in mind that CONO is not the only dairy processor in the case study area. Other processors are important to achieve a critical mass with respect to visible dairy cows in the area. We will start with discussing the 4 ESBOs in more detail (see also Table 1).



The four ESBOs are:

1. Landscape character and cultural heritage. Compared to other regions, grazing in the case study area is more common than in other areas and farmers are aware of this culture. From the literature it follows that an open landscape with grazing cattle is appreciated by the general public (Van den Pol-van Dasselaar et al., 2015a). Grazing is also seen as an icon of the Netherlands (Van den Pol-van Dasselaar et al., 2015c). Farmers perceive the preferences from society in a comparable way, although, it has been argued among farmers that grazing is old fashioned (Van den Pol-van Dasselaar et al., 2015b). The contribution to the landscape character and cultural heritage was recognized by the stakeholders.
2. Farm animal welfare. Grazing allows a cow to show her natural behaviour and offers more stimuli to a cow compared to non-grazing. However, in the winter period cows need to stay indoors because of climatic reasons (to cold and no grass available). Nowadays, most farms use cubicle sheds in combination with parlour milking for the winter period. This has many advantages compared to older systems: lower labour input, easier to mechanise and manage and improved animal health and welfare (Horne and Prins, 2002). With the introduction of automatic milking systems (AMS) only pasture sites of the home plot are suitable for grazing since the cows need to be able to go to the milking robot all throughout the day (Van den Pol-van Dasselaar et al., 2015d). It is expected that in the future more farmers will adopt AMS (30% of dairy farmers in 2020).
3. Soil functionality. In the Netherlands, large differences in soil quality exist. In some parts of the case study areas the soil type prevents extended grazing (e.g. peat soils). Nitrogen (N) and phosphorus (P) cycle through the farming system by transfer between different components of the farm, i.e. from crops/feed to herd, from herd to manure, from manure to soil and from soil to crops/feed (Van den Pol-van Dasselaar, 2015c). To maintain soil fertility and grass yield, N and P need to be managed in a sustainable way.
4. Species and habitats. Due to grazing, biodiversity increases (Van den Pol-van Dasselaar, 2015a). Grazing plays an important role in supplying feed for meadow birds (Eekeren, 2013). Further, fine-tuning grazing and moving is beneficial for the reproduction of meadow birds (Melman et al., 2013). It needs to be kept in mind that grazing is not the only factor, other factors are groundwater level, intensity of farming and grassland composition.

The uptake of grass during grazing depends on the availability of grass, additional feeding, the number of hours in the field per day, the number of cows per plot and the number of days outside (Rommelink et al., 2015). In practice different grazing systems (e.g. unlimited grazing (day and night, 16-20 hours), limited grazing (usually daytime only, 6-10 hours), very limited grazing (only several hours per day, see Van den Pol-van Dasselaar et al., 2013) are applied depending on the number of hours per day cows can graze. Both, the number non-grazing cows has increased and if grazing is practised, the average number of grazing hours per cow per day has reduced (Van den Pol-van Dasselaar, 2011). Table 1 shows that on average cows graze much more days a year than the minimum requirement of 120 days. If the cows graze, it is also a longer time than the minimum level of 6 hours a day.



Table 1 also indicates that larger farms on average adopt the smallest number of grazing days and the average number of hours cows graze is below that of smaller farms. In addition, there is a seasonal effect regarding the number of hours cows on average graze throughout a day. Grazing is highest during the summer months (July – August). This implies that ESBOs from grazing are also seasonal.

Table 1 Key indicators on grazing in het Netherlands and the case study area, farms with dairy cows grazing 120 hours a year, at least 6 hours a day, 2015

Number of cows	Number of cows	Farm size (ha)	Home plot (ha)	Grazing days	Share of grazing in total number of hours per day (max. 20 hours per day)		
					May-June (%)	July-August (%)	September-October (%)
The Netherlands							
< 50	34	26	11	206	56	66	55
50-100	73	44	18	180	39	48	38
100-150	122	64	27	174	34	40	28
150-200	169	87	35	168	32	43	30
> 200	271	128	54	158	31	40	29
Total	86	49	20	183	41	50	39
West Netherlands							
50-100	69	44	21	192	55	71	50
100-150	114	60	40	176	39	48	27

Source: Farm Accountancy Data Network (FADN), the Netherlands

Intensification of the dairy sector has the largest negative effect on pasture grazing, partly because of the need for more control over business operations on and partly through reduced availability of grazing area around the farm. On the other hand, low costs and social acceptance of the sector serve to stimulate pasture grazing. Furthermore, the dairy sector and the government are aware that keeping cows in pastures stimulates natural bovine behavior (Reijs et al., 2013).

Van den Pol-van Dasselaar et al. (2015d) identify facts as well as softer arguments in favour of grazing. The facts distinguish between economic conditions (e.g. cost savings), climatic conditions (high levels of grass growth), topography (some regions are unsuitable to grow arable crops or maize), soil type (sand, peat, clay), infrastructure at the farm (e.g. tracks and fencing), and farm support through the CAP. The softer arguments facts are linked to the inner motivation of the farmer (e.g. farmers use AMS also for a better lifestyle), social pressures, image/perception of grazing (it has been seen as old-fashioned), skills of farmers and their level of education. Larger farms in the Netherlands, measured in number of cows, throughout the year graze a smaller number of days a year and also graze a shorter part of the day (Table 1).

Grazing cows are appreciated by the general public through tourism and by consumers. Tourists mostly appreciate the contribution to the landscape of grazing cows, whereas the wider



society seems mainly interested in animal welfare. Farmers recognize the importance of grazing for visitors of the area, both for tourism and recreation from surrounding urban areas. Dairy processors in the Netherlands are in favour of grazing systems. They argue that cows are part of the Dutch landscape and the general public attaches a high value at grazing cows (The Dutch Dairy Association (NZO), www.nzo.nl). In order to be able to work towards a future-proof and responsible dairy sector, the Sustainable Dairy Chain initiative (dairy processors and dairy farmers) has formulated a goal on retention of pasture grazing. CONO Kaasmakers is part of this initiative. They argue that “as grazing cows make the dairy farm industry visible and define the image that society has of the Dutch dairy sector and its products.” (see Reijs et al., 2015).

When consumers are asked for their types of appreciation towards dairy products – compared to other types – they express a strong appreciation towards grazing cows (Haaster-de Winter and Hoogendam, 2011). More than 80% of the Dutch population indicate that pasture grazing is important or very important. About 70% of the Dutch population is willing to pay more for milk from grazing cows, although it needs to be mentioned that the question asked is not very precise and a stated preference (Table 2).

Table 2: Response to question “Are you willing to pay a higher price for 1 litre milk if this implies that cows can graze more days per year?”

	Absolute number	Share of total (%)
Yes, 1-5 cent more	342	35
Yes, 6-10 cent more	225	23
Yes, 11-15 cent more	62	6
Yes, more than 15 cent more	69	7
No	16	16
I do not buy milk	82	8
I do not know	31	3
Total number	971	100

Source: Milieudefensie/TNS-NIPO, 2015

In a somewhat older report (Van den Pol-Van Dasselaar et al., 2002), and based on the outcomes of a questionnaire survey where 258 Dutch were asked about their opinion on the importance of grazing, it is said that animal health and welfare is the most important reason for cows in pastures. That is, people think that a cow in a field is better off; these cows usually have better opportunities to perform natural behaviour compared to indoor-housing. However, people not only think that pasturing benefits animal welfare, they believe it benefits nature and landscape too. Grazing as a key factor for the quality and flavour of the milk was considered less important.

2.4 Ancillary economic and social benefits provided ‘on the back’ of ESBOs

Are there any obvious additional economic or social benefits provided on the back of ESBOs? Rural amenities, for example, can increase the tourism potential leading to new jobs and income sources. Please identify ancillary economic and social benefits in conjunction with the



analysis and description of the SES, and pay particular attention to the EU objectives of inclusive, smart and sustainable growth: creating employment, enhancing sustainability, strengthening innovative capacity.

3 Shifting societal norms, collective learning and voluntary actions

At least 85 percent of dairy cattle in the northwest part of the Netherlands (the pasture areas in the west part of the provinces of Utrecht and North and South Holland) has access to pasture. In the vast pasture areas in the east and north of the country and in the south-western province of Zeeland, 65 to 75 percent of dairy cows are pastured. In areas of intensive dairy farming, like the southern province of North Brabant, the number of grazing dairy cattle is significantly lower.

Private and public measures can be devised to maintain or enhance grazing on dairy farms. These policies should counteract the full-time housing of cattle, and improve the image of dairy farming as becoming increasingly industrial. Grazing makes dairy farming visible in the landscape and is therefore nowadays seen as a crucial element for dairy farming to keep up a positive image within society (e.g. Outdoor Grazing Covenant, *Convenant Weidegang*, 2012²). Covenants are a voluntary negotiated agreement between the government and sectors of industry (see Bressers et al., 2011).³ Because generally society favours grazing, and is willing to pay for it by buying meadow dairy of *Stichting Weidegang* (Dutch Grazing Foundation), having cows graze pasture is in most situations economically attractive.

In the Netherlands, the public debate on cows in pastures is quite strong and many parties are involved. Several dairy companies, not only CONO but also major players as FrieslandCampina, have launched large commercials to boost the image of dairy products with grazing as one of the trump cards. *Stichting Weidegang* actively promotes 'preservation of the current level of grazing'. The largest share of the dairy industry has joined in by signing up the Outdoor Grazing Covenant. The debate amongst dairy farmers about this Covenant is very strong.

The Grazing Foundation provides member dairy farmers with advice on outdoor grazing. Several parties who signed the covenant initiate learning oriented projects. The covenant has also been signed by universities (of applied sciences) and research institutes. CONO also aims to give advice to farmers as part of her activities within the covenant. Within its sustainability program Caring Dairy, thematic farmer groups organise 3 times a year a farm walk to optimize grazing on their farms. Caring Dairy was developed in the Netherlands by CONO Cheesemakers and Ben & Jerry's and aims to make the entire dairy chain (from milk to cream to ice cream) more sustainable. Another example to enhance sustainability in dairy farming is the project Amazing Grazing 2.0 in which the Dutch Dairy Organisation (NZO) and the Farmers Union (LTO) initiate research for finding solutions for implementing grazing and the translation of these solutions to, for instance, management tools and grazing systems. Amazing Grazing aims to

² See <http://www.duurzamezuivelketen.nl/files/Convenant%20Weidegang%20samenvatting%202016.pdf> (in Dutch).

³ At least in the Netherlands, the government prefers voluntary agreements with those producers or consumers who are directly involved in the attainment of sustainability and environmental goals.



stimulate the application and development of grazing in the Netherlands as part of future proof farming.

As will be explained later on in Section 4, instruments and initiatives to stimulate grazing can be divided into the following categories (see also Reijs et al, 2013): (i) milk price incentives ('grazing premiums'⁴); (ii) regulation on grazing (for instance, in Sweden and Norway grazing is mandatory for all dairy farms); (iii) other regulations (for instance, legislation on ammonia emission and subsidies for new housing are more favourable for dairy farms that apply grazing compared to non-grazers; (iv) knowledge development (has, for instance, the new generation of farmers been educated with the tradition of grazing?); and (v) CAP reform.

As mentioned earlier, since a couple of years there is big pressure from the public to promote dairy cattle being kept on pasture. As a result, initiatives have been introduced to make this compulsory by law. More specifically, the Lower House is making fuss about pasture grazing and some political parties want to make it mandatory for dairy cattle in the Netherlands, against the wishes of Minister for Agriculture Van Dam. In February 2017, the Dutch parliament decided that it is better to encourage voluntary pasture grazing than to prohibit the full-time housing of cattle. If by 2020 more than 20 percent of the Dutch cows are confined indoors all year round, then there is still a chance that regulation on grazing is put in place. However, nothing is sure in life, because a few days later a motion passed in parliament calling on the government to find any way possible to still secure pasture grazing. It is not clear yet how this motion should be interpreted, what its implications are and whether this means that grazing becomes mandatory for dairy cattle in the Netherlands. But what is certain is that the public debate on cows in the meadow is not over yet.

The idea behind this decision is that the choice between putting cows in the meadow or keeping the cattle indoors (and whether pasture grazing should be voluntary or mandatory) should be made integral, by individual farms. Unilaterally imposed regulation is not farm specific, but usually based on some 'single components' that should fit the entire sector. A voluntary choice, tailored to a farmer's own agricultural entrepreneurship will make a greater contribution to actual grazing – and thus to the provision of ESBOs – since the entrepreneur is expected then to be more motivated. As such, voluntary grazing is a well-understood, anticipating and proactive strategy, not only to guarantee a farm's long term continuity, but also to create a new competitive edge with meadow dairy products of the Grazing Foundation anticipating a further 'greening' of consumer preferences.

So, an advantage of milk price incentives is that, at least in principle, it combines the properties of effectiveness in ESBOs terms and efficiency in economic terms. Through the pricing mechanism, ESBOs will be supplied by those who can achieve them at the least cost (or by those for whom pasture grazing is financially most attractive). Such a dynamic efficiency property is generally not ascribed to regulation on grazing: inflexibilities in rules and legislation leads to static inefficiencies, ignoring cost differences between firms. Moreover, it can be expected

⁴ In the Netherlands a grazing premium has been applied by CONO since 2002. Friesland Campina (75% of the milk) introduced the grazing premium in 2009.



that regulation results in a relatively heavy burden on the government budget, since the administration and enforcement costs often prove to be relatively high.

In general, and from the theoretical viewpoint of environmental economics, it can be said that regulation on grazing better meets the objectives of the government than using grazing premiums, although it is at the expense of consumers' wealth and the effectiveness and efficiency of ESBO-provision.

4 Mechanisms, (collective) actions and governance arrangements to enhance the level of ESBO provision

4.1 Organisational capacities, leadership, networking and communication

4.1.1 Collectives

Nature management programs in the province of Noord-Holland are targeted to core areas for meadow birds (Kuiper, 2015). The collectives conclude contracts with farmers and secure the transfer of agri-environmental payments to 8,000 farmers (national total; 80,000 ha). The total amount transferred to farmers in the Netherlands (€60 million) is from EU and provincial funding. These payments cover the nature management practices adopted by farmers. The collectives are regionally targeted, responsible to monitor nature management and conclude management contracts for

- (i) field border management,
- (ii) protection of meadow bird and
- (iii) maintenance of landscape elements.

Collective approaches were implemented in the Netherlands and targeted at agri-environment-climate measures. The scheme started in 2016, with a short-term (until 2020) focus to enhance the efficiency of nature management and a longer-term (beyond 2020) towards sustainable rural areas, including viability of agriculture. Ministry of Economic Affairs (2016) offers the four main argument why a collective approach was adopted in the Netherlands:

- a. A cross-farm approach is considered essential to reverse the declining trend in farmland biodiversity (mainly farmland birds and ecological corridors).
- b. Flexibility regarding conservation measures, location and level of compensation would potentially increase the effectivity of programs.
- c. Implementation costs are reduced, administrative processes would be simplified and compliance to schemes improved by working with cooperatives.
- d. The Netherlands has a long tradition of agri-environment co-operatives, operating as cooperatives securing the provision of public goods and a partner for farmers and the government.

The perceived benefits of such cooperatives would be (a) increased environmental outcome; (b) increased flexibility regarding the design and location of conservation measures. By 2016, there are 40 collectives in the Netherlands. They operate as applicant. The province of Noord-



Holland has four collectives: (i) *De Lieuw*, (ii) *Hollands Noorden*; (iii) *Water, Land en Dijken*; and (iv) *Noord-Holland Zuid*.

4.1.2 Outdoor grazing covenant

Pasture grazing is promoted through the outdoor grazing covenant (*Convenant Weidegang*) (Reijs et al., 2016):

- a. Providing financial incentives for pasture grazing.
- b. Offering support for new pasture grazing farms and the development of new knowledge. The Dutch Grazing Foundation (Stichting Weidegang)
- c. Develop new knowledge and grazing concepts.

The outdoor grazing covenant was agreed in 2012 as part of the Sustainable Dairy Chain. This covenant was agreed among a large number of parties linked to the dairy chain, including dairy farmers, dairy companies, retail, cheese traders, nature organisations, government, as well as education and knowledge. Dairy companies target to commercially market products that are produced from dairy cows with pasture grazing. Pasture grazing is certified with a minimum of 120 days a year, and 6 hours per day at least.

Figure 5 presents a picture of outdoor-grazing in the Netherlands. It shows that fields still could look empty. Outdoor-grazing takes place through rotational grazing systems, mainly at the field parcel near the farm house.

Quote: 'More than 90% of the dairy cows graze in this region. Rotational grazing systems are applied. This implies that most of the fields could look empty. However, the grass from the whole farm is used to feed dairy cattle.' (Farmer, during interview)



Figure 5: Outdoor grazing in the western part of the Netherlands (photo: Floor Brouwer)

4.2 Innovative governance arrangements and mechanisms supporting ESBO provision

4.2.1 Concept of incentive mechanisms in markets and measures

Innovation and motivation are key factors for the successful adoption of market-driven approaches to support the provision of ESBOs (Figure 6). The figure does distinguish between markets and different incentive mechanisms. The features of private-sector approaches are compared to more public-sector driven approaches to stimulate ESBOs. Some schemes aim to create new markets and innovation seems to be the key mechanism. Motivation of farmers is the key focus when a scheme operates with a market mechanism.

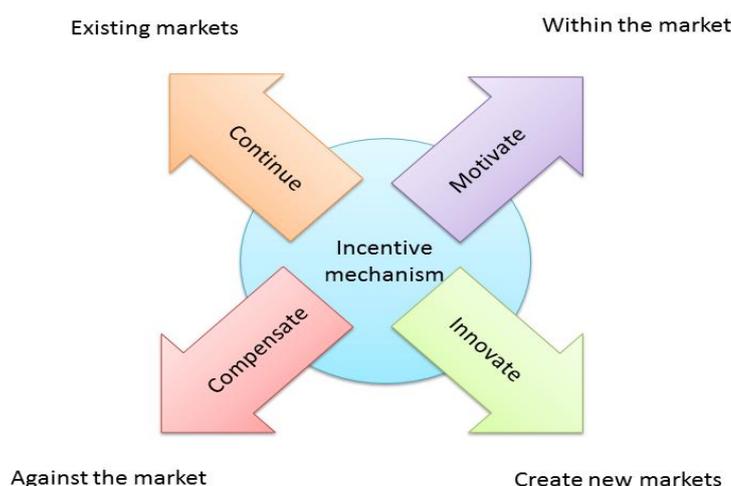


Figure 6: Incentive mechanisms for the provision of ESBOs by farmers (source: adapted with the permission of Franck Kuiper, Province Noord-Holland)

Farmers build their grazing strategies on all four incentive mechanisms, although preferences for strategies differ per farmer depending on their farming styles. Incentive mechanisms towards farmers operate through the markets (existing markets or entering new markets) or, alternatively, through payments (private schemes through the food-chain, or public schemes through the CAP). In the context of the CAP Pillar II payments, farmers are compensated for not adapting their practices. Such payments could compete against market payments (including milk prices that becomes increasingly volatile in a liberalised market). Such Pillar II payments (e.g. nature management) in the CAP are incentives targeted to solve market failure to deliver ESBOs. Contrary to such compensatory payments in the CAP, there are market-driven payments. Motivation is a key feature of such incentives (e.g. grazing premium for the delivery of milk) that stimulate farmers to operate within the market. In addition, there are incentive mechanisms that target towards existing markets (e.g. selling cheese) or creating new markets (e.g. supply of ice through grazing milk) (see e.g. <http://www.benjerry.co.uk/>). The motto “Ben & Jerry’s Caring Dairy™ programme, with over 300 participating farms in America and Europe, is helping farmers to make a difference from soil to sunshine and everything in between.” (<http://www.benjerry.co.uk/values/how-we-do-business/caring-dairy>). For this purpose it is needed to innovate within the supply chain. In existing markets it is needed to continue to

meet the requirements of these markets. These markets can evolve in time resulting in a need to adapt to consumer preferences for cheese. Soil quality would be an ESBO that could be supported from such mechanisms to enter new markets. In addition, incentive mechanisms might also target to remain compliant with changing requirements in existing markets.

4.2.2 Environmental policy

In anticipation of the abolishment of the milk quota regime, milk production has increased by most farmers in the past couple of years. The excess amounts of phosphorus increased rapidly, mainly with dairy farming. A proposal is sent to Parliament (September 2016) to introduce a right to the amount of phosphates produced in dairy farms. Farmers will only be eligible to grow dairy cattle in coming years if they have adequate amounts of phosphate rights. Such rights will be admitted by early 2017 and the reference level relates to the number of cows by 2 July 2015, when the system was introduced. A three percent reduction in the number of dairy cows is considered needed to comply with European legislation regarding emissions of phosphate. Sanctions might be introduced to dairy farming in the Netherlands if such reduction would not be achieved in time.

Phosphorus rights are going to be equivalent to the maximum allowable amount of phosphorus from livestock manure during a calendar year. It remains to be clarified how extensive production systems are affected. The production rights are transferable, but as part of each transaction, they are reduced by 10% of the amounts transferred. Such reduction of production rights is not applicable within a family from one generation to the next. The system will be applicable to all dairy farmers, but the generic reduction will become less severe for farmers with a large size of agricultural land related to the number of cows.

The dairy sector has introduced measures to reduce milk production and subsequently phosphorus emissions. FrieslandCampina, for example, has launched a program in September 2016, to compensate dairy producers for their reduction in delivery of milk. This voluntary program was in anticipation of upcoming measures to introduce phosphorus rights. Members of this co-operative who would reduce the delivery of milk would be compensated at an amount of €0.10 per kg of milk that is reduced. This amount comes on top of a European premium of €0.24 per kg of milk that is reduced. Farmers who reduce milk production during a period of six months by at least 2,000 kg and at most 40,000 kg would therefore be compensated by in total €0.34 per kg.

In February 2017, the Ministry of Economic Affairs introduced a program to farmers who their business and remove all animals (either by slaughter or export to other countries). This program allowed for a compensation of €1,200 per dairy cow or €276 per calf. The first tranche (20 February 2017) included 10,000 cows, and was closed very soon. The program in total has a budget of million €50. Half of the budget is from the Ministry of Economic Affairs, and the other half originates from the dairy sector. The compensation is foreseen to be reduced in upcoming rounds, since farmers could still continue delivery of milk in the coming months.

4.2.3 Agricultural policy

The size of the home plot (ha) and the number of dairy cows are essential farm management features to enable outdoor grazing (see Figure 7).



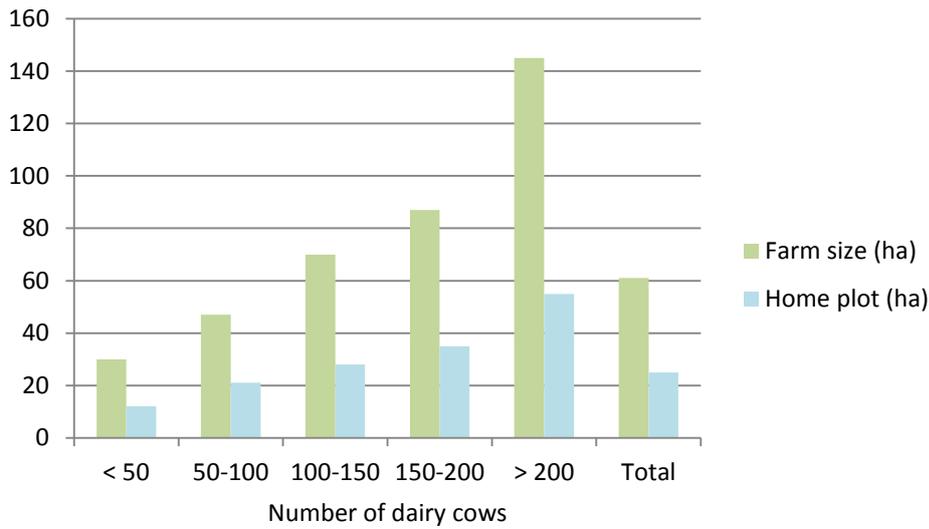


Figure 7: Key indicators on grazing in het Netherlands and the case study area, farms with dairy cows grazing 120 hours a year, at least 6 hours a day, 2015 (Source: Farm Accountancy Data Network (FADN), the Netherlands)

More than 90% of the dairy farms who are member of the CONO Kaasmakers have adopted outdoor grazing (120 days, at least 6 hours a day). The home plot on average is 29 ha in the western part of the country, which is approximately sixty percent of total farm size. It contributes to reaching outdoor grazing for close to 190 days per annum (Table 3).

Table 3: Features of dairy farmers with outdoor grazing in ‘Westelijk weide’ and other parts of the Netherlands, relative to average of dairy farming in the country (situation in 2015)

Feature	Farms with outdoor-grazing (120 days, 6 hours a day)		Average of all dairy farms in the country
	Westelijk weide	Other parts of country	
Farm size (ha)	48	50	53
Size of home plot (ha)	28.8	21.9	15.3
Number of dairy cows	77	88	97
Milk production (1,000 kg milk)	596	703	797
Milk per cow (kg)	7,722	7,984	8,238
Number of days with outdoor grazing	188	183	137
Share of farms with outdoor grazing (120 days, 6 hours a day) (%)	100	100	72
Share of peatland in total land area (%)	55	6	15
Share of sandy soil in total land area (%)	10	65	57
Milk price (€ per 100 kg)	33.5	35.0	34.4
Income from farm operation (1,000 €)	51.8	36.8	38.0
CAP - Pillar one payments (€ 1,000)	12.0	14.3	15.8
CAP - Pillar two payments (€ 1,000)	4.0	10.1	7.5
Outdoor-grazing premium (€ 1,000)	4.8	7.4	6.1
Total revenues per cow (€)	2,792	3,050	3,103
Revenues from milk (€ per cow)	2,540	2,751	2,762
Revenues from dairy products (€ per cow)	3	10	56

Source: LEI-Informatienet.

Pillar I payments at dairy farms with pasture grazing in the western (polder) part of the country on average is some €12,000 per farm. This is smaller than the average of all dairy farms in the Netherlands (€15,800 per farm). While total milk production at the first group does reach 596,000 kg milk per holding, it is 797,000 kg milk per holding at the average of all dairy farms. CAP Pillar II payments at dairy farms with outdoor-grazing in the western part of the country on average is some €4,000 per farm, which is considerably below that of the average of all dairy farms in the Netherlands (€7,500 per farm).

Market prices and premium for outdoor-grazing

Market prices in 2014 were around €41 per 100 kg of milk. Since then, market prices rapidly declined (€34 in 2015) and reached around €27 per 100 kg of milk (summer of 2016). Some farmers interviewed targeted at maintaining revenues by increasing milk production, and reduced costs because the fairly low costs of feed, energy and capital.

The premium for pasture grazing was still fairly small in 2015. By then, the premium for outdoor-grazing on average was some €4,800 per holding in the western polder region of the Netherlands. By 2016, the payment is some €1.00 per 100 kg of milk, and CONO has announced to double the payment in 2017, to reach €2.00 per 100 kg of milk. The outdoor-grazing premium would be some €15,000 per farm for a dairy farm with 750,000 kg of milk.



Revenues

Total revenues per cow are around €2,792 per cow, and includes milk (€2,540 at dairy farms in the western polder region of the Netherlands who also adopt outdoor-grazing), complemented with €3 from on-farm sales of processed dairy products (e.g. yoghurt, cheese). The revenues differ by farm size (Table 4). The grazing payment includes a sustainability payment, which however is a small part of this payment.

Table 4: Dairy farmers with outdoor grazing in ‘Westelijk weide’ and other parts of the Netherlands, relative to average of dairy farming in the country (situation in 2015)

Number of cows	Production value of milk (€, excluding VAT)	Pillar 1 payment in CAP	Pillar 2 payment in CAP	Grazing payment
The Netherlands				
<50	80,232	5,830	2,019	2,328
50-100	200,385	11,914	1,579	6,153
100-150	339,492	19,547	5,960	10,862
150-200	465,284	27,488	4,070	14,254
>200	740,216	38,773	4,212	22,823
Total	234,442	13,878	3,019	7,308
West Netherlands				
50-100	173,031	10,783	3,152	5,309
100-150	310,314	17,284	5,203	10,999

Source: LEI-Informatienet.

For the Netherlands, the average milk price per farm was about 34.6 eurocent (std. dev. 3.75). Pillar 1 and pillar 2 average payments amount respectively about 2,2 cent (std. dev. 0.7) and about 0.6 cents (std. dev. 1.9). For CONO, the grazing payment in 2015 was 1 cent per kg and 2 cent per kg in 2017.

4.3 The role and impact of policy in ESBO provision

About 10 years ago there was still grazing at a large scale and there was hardly concern about possible declining trends. However, the share of the number of grazing cows in total number of cows decreased since then. Societal preferences gained visibility, through animal welfare groups and the Dutch Party for Animals. In 2013, the Government mentioned in a letter to the House of Representatives that she support the dairy sector initiative (Covenant Stichting Weidegang) in their objective to maintain the level of grazing at the existing level⁵.

After a long period of hearings and debates, the Dutch house of representatives has voted in favour for a motion asking the government to introduce regulation to guarantee grazing of dairy cattle⁶. The motion itself does not give insight in the way it should be arranged. Motions that were precise (e.g. more SMART with respect to number of days, number of hours per

⁵ Letter of Secretary of State of Economic Affairs to Dutch Parliament of 13 December 2013.

⁶ Dutch Parliament, House of Representatives, Motion 21501-32-982, Party for Animals 23 February 2017



days and the year in which more than 80% of the dairy cows should be grazing) were not accepted. Earlier, the House of Representatives had already accepted a motion which states that cows need to be grazing⁷. This motion was a follow-up of a motion from 2014 which stated that cows should be grazing, asking the government either for regulation or an agreement with the dairy sector on grazing cattle.

In the period in between, the House of Representatives and government discussed during several occasions grazing of dairy cattle (2016-2017). For instance in June 2016, many organisations (science, society and dairy sector) were asked to express their views on grazing. The dairy sector itself is not in favour of a legally binding grazing standard. On the one hand, the dairy sector argues that an existing business model for farmers with voluntary grazing will be lost when a legally binding standard is introduced. On the other hand, animal welfare organisations and political parties like the Party for Animals and left wing parties pursue a legally binding grazing requirement. During the first half of February 2017, the House of Representatives requested the government to prepare a legally binding grazing requirement in case less than 80% of the dairy cows is grazing in 2020. However, as mentioned before, the House of Representatives decided later in February 2017 to introduce a legally binding grazing requirement. At the moment, the consequences of this motion are unclear.

4.4 The role of the private sector in ESBO provision and enabling factors

The grazing premium offered by milk processors link farming practices to product quality. Such a premium is therefore embedded in a marketing strategy, which potentially is stronger than public sector driven approaches. Cheese from CONO Kaasmakers (*Beemsterkaas*) is produced from 100% grazing milk, 120 days a year at least six hours a day. Inspection of grazing and assurance of the quality is through CONO Kaasmakers (with on-farm visits) and an independent body (Qlip – quality assurance in agrifood: <http://www.qlip.nl/en/>), inspecting through a selection of farms (offer a high quality product on the market, including the active marketing of milk from grazing. The intensity of production is below that of other parts in the country. The size of the home plot remains a critical feature of the farm to enable grazing.

5 Potential pathways towards an enhanced provision of ESBOs

There are several tensions and synergies between the provision of ESBOs:

Synergies are created among the four ESBOs: landscape character and cultural heritage, farm animal welfare, soil functionality and species and habitats. The grazing premium offered to dairy farmers is important to acknowledge the final products (e.g. cheese) are based on farming systems grazing for a considerable part of the year. It reflects the appreciation by consumers and is part of a business strategy towards the national and international market (e.g. Germany). The grazing premium creates synergies with open landscape features. A premium of €2 per 100 kg of milk will be a major incentive for farmers, and might exceed the Pillar I pay-

⁷ Dutch Parliament, House of representatives, Motion 34000-XII-80, 30 October 2014

⁸ Dutch Parliament, House of Representatives, Motion 34313, no. 8, 6 February 2017



ment in the CAP (see Table 4). It is an important feature towards consumers farmers are rewarded for the provision of public services, and securing animal welfare. Happy cows having access to fresh grass is perceived to add positively to the health and nutritious conditions of animals. Such ESBOs contribute to the quality of cheese. Grazing is an important instrument towards nature management, with less mowing of grass, different types of grass and improved soil conditions.

Monitoring of grazing and enforcement of the rules (120 days of grazing, at least 6 hours a day) remain a challenge. Monitoring of grazing is currently implemented by CONO Kaasmakers, and the dairy farms keeps track of outdoor-grazing through a calendar. The co-operative visits the farm to inspect outdoor-grazing. Quality assurance needs to be implemented through independent bodies. In order to assure the quality, Qlip (quality assurance in agro-food) does perform a selection of farm visits to monitor outdoor-grazing. More advanced ICT technology (e.g. GPS system) could create synergies with the maintenance of open landscapes.

Image is important for the provision of ESBOs, especially the ESBO on landscape character and cultural heritage. Management of landscapes through grazing systems are important for the image of a region. Grazing is appreciated by the local population, as expressed by media attention. Some farmers also invite school classes to visit their farm and explain the contribution of the farm to the region and beyond.

Environmental policy remains an important challenge for dairy farming in the Netherlands. Phosphorus rights are going to be introduced in 2017, equivalent to the maximum allowable amount of phosphorus from livestock manure during a calendar year. It remains to be agreed how extensive production systems are affected. Meanwhile buy-out programs have been implemented during the first quarter of 2017.

Labour requirements of outdoor-grazing could create tensions with maintaining open landscape features. Grazing requires additional labour for transfer of dairy herds, but reduces some of the labour needs for mowing of grass. Compared to in-house production-systems, Grazing is more unpredictable and requiring more labour.

Image motivates farmers to maintain grazing. Pasture grazing is an important feature of the region towards local population. The image towards the local population is a feature of outdoor-grazing. Moreover, membership of a co-operative CONO Kaasmakers promotes quality products, including milk from outdoor-grazing systems. The special quality of the grass is achieved from the sea-wind, adding to the taste of the cheese.

The price of land is a key socio-economic factor for outdoor-grazing, mainly with an increase in milk production. Additional land is needed to enable an increase in production (among others because of environmental legislation). Land prices are high (the order of magnitude of €80,000 per hectare), especially in the highly productive clay area with bulb growing as intensive production systems and high revenues per hectare.



So far, the rules for grazing focus at 120 days per year, with a minimum of 6 hours a day. However, the number of grazing days in the western part of the Netherlands exceeds 180 days. There might be scope to introduce a graduation of grazing premium, with a higher payment if the number of grazing days is considerably higher. Organic farming, for example, already introduced grazing rules with grazing for at least 6 months (15th April to 15th October), at least 8 hours a days. This might create niche products, potentially with higher prices, and could acknowledge the provision of ESBOs that exceed national average.

6 Suitability of the SES framework and ‘action-orientated approach’ in the analysis of ESBO provision

The social-ecological framework (SES framework) was designed with a view to gradually build a comprehensive picture of the main interactions among the resource systems in place, their drivers, key actors and outcomes. This framework was grounded in a couple of expert interviews in Steps 1 and 2, complemented with a literature review. Interviews in stage 1 and 2 were designed, taking into account the comprehensive view of the framework.

7 Main conclusions derived from the Steps 3-4 analysis

7.1 Key findings on the particular SES and the provision of ESBOs

Corporate social responsibility is a key feature of the marketing of *CONO Kaasmakers*, with focus on a fair price for farmers, happy cows (to reflect high animal welfare conditions) and high levels of soil functionality. Grazing is the farming system in place, which is linked to the ESBO in place, i.e. provision of landscape character and cultural heritage.

7.2 Key findings on governance arrangements and institutional frameworks

Pasture grazing is branded by the cheese makers and other dairy processors in the Netherlands. The current premium for outdoor grazing is governed by dairy processing companies in the country. Milk processors have adopted diverse systems with respect to the level of payment and requirements. In our case study, CONO cheesemakers offers a premium of € 1 per 100 litre of milk (situation 2016), subject to outdoor-grazing of 120 days (at least 6 hours a day). The company will double the premium from 2017 onwards, to be € 2 per 100 litre of milk. Dairy farmers who comply with outdoor-grazing requirements receive the premium if the cows stay out for at least 120 days and a minimum of 6 hours a day. The premium is to acknowledge appreciation by the consumers for outdoor grazing and evidence to offer a ‘fair price’ to farmers. Outdoor grazing is important in branding the cheese.

Including the value chain more explicitly in the methodology is important for private based mechanisms. A number of challenges remain that could potentially affect outdoor-grazing in the future, and subsequently the provision of ESBOs:



- It remains a challenge what is the perspective of public goods related to dairy farming in the coming ten to twenty years. The sector does currently face a highly volatile market and considerable price fluctuations over time. It is important how to strengthen the link between economy and ecology. Farmers tend to focus on modernization, increasing production and intensification. A new link between economy and ecology (e.g. to link nature with water management) could offer perspectives to dairy farming. This needs to be explicitly included in the methodology.
- A fixed premium (e.g. subject to the provision of milk with grazing) might be provided to the farmer with grazing, also to acknowledge the provision of public goods (e.g. landscape management, nature management). Moreover, primary production would be delivered to a volatile global market.
- It remains unknown what is the role of public sector for the maintenance of public goods. The public sector (e.g. provincial authorities) might be mainly to facilitate the provision of public goods, rather than control and transfer payments. Example: collectives in the Netherlands have bought drones to monitor nests for birds in grassland.
- Farmers appreciate that the premium is targeted at farming practices and therefore is legitimized. In this sense, a premium for grazing can be explained to their (non-farming) neighbours as something positive.

7.3 Other enabling or limiting factors

Several factors enable outdoor-grazing and subsequently support the provision of ESBOs:

- The business payment scheme does acknowledge outdoor grazing is a quality premium for dairy farmers. Branding outdoor grazing will enable dairy farmers to maintain landscape management, possibly with other environmental and social benefits from dairy farming.
- Outdoor grazing showed a declining trend in the past decade and stabilized in the recent past. In order to meet the availability of grass to be able to feed the dairy herd, farm structure features are critically important to maintain outdoor grazing. The two most important ones are the number of dairy cows and the size of field parcel near the stable.
- Appreciation by consumers is a key factor enabling outdoor-grazing. It is also perceived by consumers as a notification of quality of production. The size of the parcel near the farm house is a key factor whether or not dairy farmers are able to maintain outdoor grazing.

The main factors limiting outdoor grazing relate to the abolishment of milk quota. The abolishment of milk quota induced an increase in the number of dairy cows in the Netherlands, which eventually reduces the possibility to feed all dairy cows from the grassland that is near the farm house. In addition, manure legislation tends to stimulate livestock producers towards in-house production systems, mainly to control emissions and dispose livestock manure.

Payments for delivery of public goods might be most appropriate if it could be linked with product quality rather than public payments. Public policy aims to reverse the decline in outdoor-grazing and have 80% of the cows in outdoor-grazing by 2020. It remains a challenge



how outdoor-grazing could be secured in the coming ten to twenty years. Such an understanding could offer perspective to the dairy sector in a highly volatile market.

The figure shows the declining trend of outdoor-grazing. Recently, there is a stabilization in the number of grazing cows. While 90% of the cows were managed by outdoor-grazing in 2001, this figure reduced to 70% (2014). The number of cows with outdoor-grazing in the western part of the Netherlands exceeds national average.

7.4 Contributions to EU strategic objectives

The grazing premium from the dairy sector is directly linked to the marketing of products (e.g. milk, cheese, ice). Retail sector in Germany, for example, is increasing demanding the grazing is assured through digital measuring systems. Different digital systems are approved to assure grazing does comply with the system of grazing for 120 days and at least 6 hours a day. Criteria to approve these digital system are robustness, trustable and useful at the farm (<https://drimble.nl/dossiers/agrifood/41486401/drie-meetsystemen-toegelaten-voor-weideregistratie.html>). The systems approved are from GEA (www.gea.com), VSM and the Internet House (<http://www.hetinternethuis.nl/Het%20Internet%20Huis%20-%20Weidgang%20-%202017%20-%20Digitale%20Flyer.pdf>).

7.5 How about the transferability of the approach/mechanism used?

Grazing is on the decline throughout Europe, and some northern European countries (e.g. Sweden) have introduced mandatory regimes for grazing. Other countries (e.g. Austria) have established markets for the delivery of milk from organic production and fully making use of hay to feed the animals. The Dutch Grazing Foundation (*Stichting Weidemelk*) also initiated efforts to enhance grazing at dairy farms in Germany. There are at least three factors critical for the successful transfer of mechanisms towards other regions and approaches:

- a. The business premium is linked to the story of grazing.
- b. Skills of grazing and grassland management needs to be improved. Knowledge transfer about grassland management needs to be improved, among others with farmers who transform from indoor-production towards grazing systems. The Dutch Grazing Foundation does guide a few hundred dairy farmers who want to re-introduce grazing in their production system. Grass could again become part of the future of the CAP.
- c. Dairy market (processing and retail) is transforming and increasingly targeted towards grazing.

Related to these factors, grazing needs to be implemented in modern production systems (e.g. automatic milking system, with milking robots to be integrated with grazing systems; increasing scale of production).



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9 ANNEX: Reflections on the case study methodology used

9.1 Objectives and activities undertaken with initiative/stakeholders

CONO Kaasmakers is interested to participate, and this was confirmed in October 2016. The existing premium for outdoor grazing is governed by dairy processing (e.g. cheese makers in co-operatives like CONO Kaasmakers). Milk processors have adopted different systems, and CONO Kaasmakers has decided to increase the premium from 2017 onwards. It was mutually agreed to study the premium from the business sector in the context of appreciation and valuation of ESBOs (mainly landscape value) through farmers, consumers of milk products (e.g. cheese, ice) and people living in a region. We consider the business case to be very innovative in the context of Europe.

The premium for pasture grazing is an initiative taken by the dairy sector. The case study is highly relevant in the context of the abolishment of milk quota regime, and the volatile dairy market. Following the rapid increase of milk production in the recent part which increases pressure on the manure market. There is a discussion to introduce additional manure legislation. Farmers complain that quota on the production of phosphorus in manure is increasingly felt as a new type of legislation to control milk production. Manure legislation could increase the share of farming with in-house production systems. Grazing is politically sensitive as illustrated by the hearing in the Dutch parliament on the topic, July 2016. Parliament has recently decided not to introduce a mandatory system of permanent grazing.

The case is relatively small with respect to the area, which complicates the potential for up-scaling. Pasture grazing is declining in Europe, due to intensification of production and increase of animal production per farm. The learning potential is embedded in the factors that play a role. Replicability also depends on the context in other areas. Other products sold as specific niche markets for different attributes of products could learn from this case. There is potential to compare the premium for outdoor grazing, initiated by the business sector with CAP support payments and milk prices.

The following stakeholders are interviewed:

- May 25, interview with Franck Kuiper, Province Noord-Holland. Discuss the importance of collectives in the context of agri-environmental programs, and the increasing importance of provincial authorities towards agriculture and nature management.
- June 2, interview with Grietsje Hoekstra, CONO Kaasmakers, Westbeemster. Discuss premium for outdoor grazing. Outdoor-grazing is considered essential to secure product quality (mainly cheese). The premium has stopped the decline in outdoor-grazing. The size of the home-plot might become a constraint with an increase in the number of dairy cows per farm.
- August 5, interview dairy farmer in Lambertschaag.
- August 5, interview dairy farmer in Midwoud.
- August 12, interview dairy farmer in Hobrede



- August 29, interview with Grietsje Hoekstra, CONO Kaasmakers, Westbeemster. Reporting on the interviews and discuss initial plan for a follow-up. A proposal will be send to CONO Kaasmakers before September 15.
- December 13, interview Kees-Jaap Hin, Dutch Grazing Foundation (Stichting Weidegang), to discuss incentives for pasture grazing
- December 22, 2016. Interview Franck Kuiper, Province Noord-Holland.
- January 24, 2017. Interview Sjaak Hoogendoorn, chair of the collective Water, Land en Dijken (WLD). Discuss the experiments on Pillar II programs to compensate for grazing, as part of the experiments towards collectives in part of North-Holland.
- March 10, 2017. Workshop with stakeholders (CONO and farmers) on the future of grazing and the relevance of the Common Agricultural Policy.

9.2 Judgement on the process

There is a good interest in the agribusiness to contribute to European discussions, including the CAP. However, dairy farmers face highly volatile market conditions (e.g. market prices highly fluctuate) and there is major debate on the future of environmental legislation in the Netherland, largely affecting dairy production. Therefore, we need to match the longer-term ambitions of PEGASUS with the current debates in the farming sector.

9.3 Supporting data and statistics

Additional data are used from the Sustainable Dairy Chain and the Farm Accountancy Data Network in the Netherlands.

