



What is the cost of producing milk?

**Calculation of milk production costs
based on the Farm Accountancy Data Network (FADN)
in Belgium, Denmark, France, Germany, Netherlands**

**Results for 2016
Cost trends and milk price comparison since 2010**

New edition





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All studies and brochures on milk production costs in different EU Member States can be found on the EMB website:
www.europeanmilkboard.org/en/milk-production-costs.html

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Introduction

Knowledge about the evolution of costs in European milk production directly affects how well and how realistically we can represent and understand developments on the dairy market. The lack of this kind of overview in the sector sparked the idea of a cost study in 2011, as something that would provide regular updates on cost developments in different European countries and would be available to all stakeholders EU-wide. A further aim of this longitudinal study was to make a contribution to mapping the influence and effect of the Common Agricultural Policy on national and regional structures.

In 2012 and against this backdrop, the dairy farmer associations within the European Milk Board (EMB) commissioned the Farm Economics and Rural Studies Office (BAL) of the *Die Landforscher* network to carry out a regular study of milk production costs. These calculations are based on official representative data for the most important milk-producing countries in the EU. Dairy farmer associations from seven European countries (Belgium, Denmark, Germany, France, Luxembourg, Italy and the Netherlands) are currently participating in this joint project. The cost of milk production in the respective EU Member States is calculated using a common methodology and is regularly updated on behalf of these associations.

The current and past economic problems faced by milk producers cannot be understood without considering how costs have developed on farms. Evaluating the economic situation on dairy farms by only looking at milk prices is very short-sighted. Regularly updated cost development studies based on universally applicable, representative data can provide transparent insight about the overarching economic situation of milk producers to political decision-makers as well as the public and different economic partners.

Furthermore, the accurate and systematic observation of the evolution of production costs is very useful to farmers, as they can adapt their economic behaviour to dairy market trends and thus strengthen their position: Since the implementation of the EU Milk Package in 2012, dairy farmers can use the option of pooling to form producer organisations, in order to collectively negotiate milk prices with the processing industry. Reliable information about production costs is an important factor in this regard.

As of 2013, the results of the milk production cost studies carried out in different European countries have been regularly published in the BAL's "What is the cost of producing milk?" reports. These documents include detailed figures and conclusive facts about the situation and evolution of costs on dairy farms of different sizes and in different regions of the EU. For readers interested in a quick overview, the participating dairy farmer associations also publish brochures with a summary of the most important facts and conclusions, which is complemented by a data sheet published by the EMB that provides a concise synopsis of the figures.

You can find the full list of publications at <http://www.europeanmilkboard.org/en/milk-production-costs.html>. A comprehensive list of all publications is included on the last page of this report.

In March 2018, an update of the study on milk production costs in France was published. This update includes an improved method for the calculation of working time and labour costs in dairy farms in France. The present new edition of the brochure on production costs in Europe includes these updated results¹.

¹ For more details see BAL, EMB (2018): *Combien coûte la production de lait? Les coûts de la production laitière en France – Résultats pour les années 2016 et 2017*

Synopsis — Milk production costs in 2016 in five European milk-producing countries

The cost calculations in the joint report document the minimum farm gate price that must be paid to farmers to ensure that production costs are covered – including appropriate remuneration for farmers themselves as well as their contributing family members.

An analysis of milk production costs up to 2016 is currently available for five important milk-producing countries – Belgium, Denmark, Germany, France and the Netherlands.

More than half (53%) of the total EU milk volume is produced in these five countries – in 2016, it amounted to more than 80 million tons.

In the same year, milk production costs in these countries were between 39.77 and 44.49 cents per kilogram. The farm gate price, however, was only between 26.70 and 30.18 cents per kilogram. This huge gap between costs and prices led to a shortfall of up to 35%.

Table 1: Milk production costs and farm gate prices in 2016 in five European countries in cents per kilogram

Milk-producing countries:	Belgium	Denmark	France	Germany	Netherlands
Production costs (end total)	41.37	39.77	44.49	41.17	42.66
Farm gate price	26.70	28.68	30.18	27.93	28.75
Cost shortfall	35%	28%	32%	32%	33%

Details about milk production in 2016

The herd size of the surveyed dairy farms varied from an average 59 to a maximum 165 dairy cows on an area of 51 to 157 hectares. Annual milk yields were between 6,949 and 9,585 kilograms.

The average dairy farm in France has a comparatively large area with a smaller dairy herd. The available area on Dutch farms, on the other hand, is very small in relation to the

Table 2: Dairy farm structure (average farm in 2015)

Country	Area in hectares	Dairy cows	Milk yield (kg)	Total Annual Work Units (AWU)	Family Annual Work Units (FAWU)
Belgium	53	70	7,368	1.79	1.75
Denmark	157	165	9,585	2.90	1.19
France	91	59	6,949	1.86	1.65
Germany	72	63	7,590	1.98	1.47
Netherlands	51	91	8,169	1.81	1.54

much higher number of cows. Danish dairy farms show the highest figures in terms of area, herd size and milk yield. The high proportion of hired labour in Denmark stands out.

German and Belgian dairy farms are very similar in terms of milk yield and herd size. However, Belgian dairy farms show a greater number of family farms.

Table 3: Composition of milk production costs in cents per kilogram

Milk-producing country	Belgium	Denmark	France	Germany	Netherlands
Input costs (seeds, fertilizers, plant protection products, bought-in feed, cost of equipment & machine maintenance and energy)	16.12	17.38	17.75	17.37	16.46
General operating costs (other specific costs for plant and animal production and all non-specific costs like labour, other general costs, paid wages, rent, interest and taxes in 2015)	16.88	24.86	23.59	20.11	21.59
Incurred production costs in total (paid costs)	33.00	42.24	41.34	37.48	38.05
Revenue from beef production (deduction)	-4.07	-4.03	-6.95	-6.44	-2.53

Continue reading on the next page

Milk-producing country	Belgium	Denmark	France	Germany	Netherlands
Production costs minus revenue from beef	28.93	38.21	34.39	31.04	35.52
Wage variable	14.71	4.07	14.21	12.81	9.31
Total milk production costs	43.64	42.28	48.60	43.85	44.83
Subsidies (deduction)	-2.27	-2.51	-4.11	-2.68	-2.17
Milk production costs (end total)	41.37	39.77	44.49	41.17	42.66

In 2016, dairy farms in all countries incurred significant losses without exception. Dairy farmers were short 2.23 cents to 9.53 cents per kilogram (Belgium and Denmark,

respectively) to even cover their incurred production costs. Remuneration for self-employed dairy farmers is not even considered in these figures!

Table 4: Shortfall in incurred production costs 2016 in cents per kilogram

	Belgium	Denmark	France	Germany	Netherlands
Production costs (paid costs post deduction of revenue from beef)	28.93	38.21	34.39	31.04	35.52
Farm gate price	26.70	28.68	30.18	27.93	28.75
Shortfall in incurred production costs	2.23	9.53	4.21	3.11	6.77

The cost of inputs contributing to production costs, i.e. seeds, fertilizers, plant protection products, bought-in feed, machine and equipment maintenance as well as energy, was between 16.12 and 17.75 cents per kilogram in the five production countries and thus quite similar. These cost headings have been extrapolated to the year 2016. For home-grown fodder (hay, silage), the costs for the required seeds, fertilizers and plant protection products as well as other costs for crop production are considered. As production costs were first reported for all cattle on the farm, the revenue from bovine animal production (e.g. from the sales of calves, fattening and breeding animals) was deducted in the next step. This gives us the production costs for milk alone.

Together with general operating costs (between 16.88 and 24.86 cents) and post deduction of revenue from bovine animal production, the subtotal for production costs is between 28.93 cents per kilogram in Belgium and 38.21 cents per kilogram in Denmark. These are costs incurred by the farm for milk production alone – they do not include the cost of family labour. Simply due to the cost of depreciation, interest and wages to the tune of 14 cents, the incurred production costs in Denmark are comparatively very high.

What is the cost of producing milk?

The calculation only considers those operational costs that can be traced back to milk production on specialised milk farms (see Allocation Legend in Calculation Diagram, p. 20/21). All costs are net values excluding value-added tax and refer to a milk equivalent with 33g protein and 40g fat.

The labour costs for self-employed family dairy farms are included in the calculation using the wage variable and account for 4.07 cents (Denmark) to 14.71 cents (Belgium) per kilogram of milk produced. Therefore, the total milk production costs are between 42.28 and 48.60 cents per kilogram. The comparatively low wage variable in Denmark can be explained by the significantly larger milk volume (165 dairy cows and milk yield of 9,585 kilograms, see Table 2) for a comparatively much smaller number of family workers.

In Belgium, on the other hand, dairy farms continue to be almost exclusively family-run without any hired labour.

The end total for milk production costs in the different milk-producing countries is between 39.77 and 44.49 cents per kilogram. Subsidies are seen as income and are therefore deducted from the total production costs. The end total does not include the imputed costs for land and capital (Table 5).

Before the publication of the first study on milk production costs in Germany in 2013, the logic and methodology used for cost calculation was examined and approved by independent experts. In essence, the methodology used to calculate production costs closely mirrors that used by the European Commission's Directorate General for Agriculture (DG Agri) in the EU Dairy Farms Report.

Table 5: Imputed costs in 2016 in the five milk-producing countries in cents per kilogram

	Belgium	Denmark	France	Germany	Netherlands
Land (rent variable)	0.59	3.43	0.31	1.16	2.19
Capital (interest variable)	0.18	0.41	0.56	0.24	0.57
Total	0.77	3.84	0.87	1.40	2.76

Forecast

In Table 6, cost developments over the last five years have been extrapolated to 2016. A similar dramatic evolution is observed in all countries.

After dairy farmers were put under major cost pressure in 2012 and 2013 due to low milk prices, they experienced a long-lasting producer-price crisis in 2015 and 2016, which was characterised by drastic price collapses. The short-lived price peak in 2014 provided some relief to dairy farmers albeit momentarily. At no point in the five years did farm gate prices cover production costs.

The latest producer-price crisis was also characterised by a drop in milk production costs in 2015 and 2016. Dairy farms had to react to the crisis by reducing costs and were therefore forced to forgo expenses that are necessary for stable and future-oriented farm development. They barely undertook any investments and had to save on all fronts.

This is documented by the significant reductions in depreciation and interest as well as the sharp drop in wages. One would therefore tend to assume that costs in 2017 will not remain at this low level because dairy farms will have to urgently make up for deferred expenses and investments. However, it will only be possible to document these results once the accounting data for the year in question is available. The situation is further aggravated by the fact that producer prices have shown only a slow recovery in the participating countries (see average farm gate price in 1st half of 2017 in Table 7).

Table 6: Cost shortfall in the last five years

Year	2012	2013	2014	2015	2016	5-year average
Belgium						
Milk production costs in cents/kg	40.41	42.78	42.42	40.58	41.37	41.51
Farm gate price in cents/kg²	30.19	37.22	36	27.93	26.7	31.61
Cost shortfall in %	25	13	15	31	35	24
Denmark						
Milk production costs in cents/kg	41.94	42.85	42.76	39.75	39.77	41.41
Farm gate price in cents/kg	34.04	38.63	39.67	31.03	28.68	34.41
Cost shortfall in %	19	10	7	22	28	17
France						
Milk production costs in cents/kg	43.81	46,88	49.67	45.74	44.49	46.12
Farm gate price in cents/kg	32.58	35.3	37.34	32.29	30.18	33.54
Cost shortfall in %	26	25	25	29	32	27
Germany						
Milk production costs in cents/kg	44.08	45.90	44.39	42.13	41.17	43.53
Farm gate price in cents/kg	32.90	38.75	38.78	30.53	27.93	33.78
Cost shortfall in %	25	16	13	28	32	22
Netherlands						
Milk production costs in cents/kg	42.96	44.57	46.47	42.46	42.66	43.82
Farm gate price in cents/kg	32.38	37.40	38.90	30.75	28.75	33.64
Cost shortfall in %	25	16	16	28	33	23

² The stated farm gate prices refer to varying fat and protein content (sources are cited in the country-specific data sheets).

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Table 7: Average farm gate price in 1st half of 2017 in cents per kilogram

Belgium	Denmark	France	Germany	Netherlands
33.73	35.58	33.08	33.89	35.71

(Source: EU MMO, farm gate price for natural fat and protein content)

Thus, the producer-price crisis will be far from over in 2017 as well. The moderate increases in farm gate prices in recent months will not make up for the financial losses incurred over the last five years.

You can find detailed information about the cost developments as well as the used base data and sources in the technical reports published together with these cost calculations. They are available under the common title “What does milk production cost?”, Editions 1-7 on the EMB website. These reports can also be requested from the Farm Economics and Rural Studies Office (BAL).



Milk Production Costs 2016

Milk Production Costs 2016

→ Belgium



In 2016, the production costs for one kilogramme of milk in Belgium were 41.37 cents, representing an increase of 0.79 cents compared to the previous year.

Milk prices, on the other hand, were 1.23 cents down on 2015 at 26.70 cents, meaning that only 65% of the producers' costs were covered.

Milk production costs Belgium in cents per kg (based on FADN 2015)

year	paid costs	+ income rate	= total costs	- subsidies	= production costs
2016	28.93	14.70	43.64	2.27	41.37
2015	28.27	14.58	42.85	2.27	40.58
2014	29.46	16.90	46.36	3.94	42.42
2013	30.47	16.86	47.33	4.55	42.78

Development of milk production costs in Belgium 2010 - 2016

year*	2010	2011	2012	2013	2014	2015	2016
production costs in ct/kg	36.33	39.21	40.41	42.78	42.42	40.58	41.37
farm gate milk prices in ct/kg**	30.46	33.11	30.19	37.22	36.00	27.93	26.70
price/cost ratio	0.84	0.84	0.75	0.87	0.85	0.69	0.65
shortfall in %	16	16	25	13	15	31	35
MMI (index)	100	108	111	118	117	112	114

* As from 2013 based on FADN 2015, before FADN 2012; as from 2016 extrapolation, 2015 provisional figures

** Source: MMO of the EU, natural fat and protein contents



(Source: trend calculations by the BAL based on Destatis and FADN data)

The current results also serve as a basis for the calculation of the Milk Marker Index (MMI) and the price/cost ratio. The MMI reflects the development of milk production costs, while the price/cost ratio shows to which extent farm gate milk prices allow to cover production costs.

Milk Production Costs 2016

→ Denmark



In 2016, the production costs for one kilogramme of milk in Denmark were 39.77 cents, representing a slight increase compared to the previous year.

Milk prices, on the other hand, were 2.35 cents down on 2015 at 28.68 cents, meaning that only 72% of the producers' costs were covered.

Milk production costs in Denmark in cents per kg (based on FADN 2015)

year	paid costs	+ income rate	= total costs	- subsidies	= production costs
2016	38.21	4.07	42.28	2.51	39.77
2015	38.19	4.07	42.26	2.51	39.75
2014	42.04	4.26	46.3	3.54	42.76
2013	42.09	4.83	46.92	4.07	42.85

Development of milk production costs in Denmark 2010 - 2016

year*	2010	2011	2012	2013	2014	2015	2016
production costs in ct/kg	41.77	42.98	41.94	42.85	42.76	39.75	39.77
farm gate milk prices in ct/kg**	31.94	35.67	34.04	38.63	39.67	31.03	28.68
price/cost ratio	0.76	0.83	0.81	0.90	0.93	0.78	0.72
shortfall in %	24	17	19	10	7	22	28
MMI (index)	100	103	103	106	108	103	98

* In the publication of October 2017 the provisional values of 2014 and 2015 have been replaced by real costs calculated on the basis of the FADN database 2015

** Source: MMO of the EU, natural fat and protein contents



(Source: trend calculations by the BAL on the basis of FADN 2015)

The current results also serve as a basis for the calculation of the Milk Marker Index (MMI) and the price/cost ratio. The MMI reflects the development of milk production costs, while the price/cost ratio shows to which extent farm gate milk prices allow to cover production costs.

Milk Production Costs 2016

→ France

In 2016, the production costs for one kilogramme of milk in France were 44.49 cents, representing a slight decrease compared to the previous years studied. Milk prices, on the other hand, were 2.11 cents down on 2015 at 30.18 cents, meaning that only 68% of the producers' costs were covered.



Milk production costs in France in cents per kg (based on FADN 2015)

year	paid costs	+ income rate	= total costs	- subsidies	= production costs
2016	34.39	14.21	48.60	4.11	44.49
2015	35.65	14.21	49.85	4.11	45.74
2014	36.87	18.34	55.20	5.53	49.67
2013	38.27	14.56	55.82	5.94	46.88

Development of milk production costs France 2010 - 2016

year*	2010	2011	2012	2013	2014	2015	2016
production costs in ct/kg	41.51	42.67	43.81	46,88	49.67	45.74	44.49
farm gate milk prices in ct/kg**	31.55	33.94	32.58	35.3	37.34	32.29	30.18
price/cost ratio	0.76	0.80	0.74	0.75	0.75	0.71	0.68
shortfall in %	24	20	26	25	25	29	32
MMI (index)	100	103	106	109	112	115	118

* All results based on FADN 2015; as from 2016 extrapolation, 2015 provisional figures
 ** Source: MMO of the EU, natural fat and protein contents



(Source: trend calculations by the BAL based on Destatis and FADN data)

The current results also serve as a basis for the calculation of the Milk Marker Index (MMI) and the price/cost ratio. The MMI reflects the development of milk production costs, while the price/cost ratio shows to which extent farm gate milk prices allow to cover production costs.



Milk Production Costs 2016

→ Germany

In 2016, the production costs for one kilogramme of milk in Germany were 41.17 cents, representing a decrease of almost 1 cent compared to the previous year.

Milk prices, on the other hand, were 2.9 cents down on 2015 at 27.93 cents, meaning that only 68% of the producers' costs were covered.

Milk production costs in Germany in cents per kg (based on FADN 2015)

year	paid costs	+ income rate	= total costs	- subsidies	= production costs
2016	31.04	12.81	43.85	2.68	41.17
2015	32.00	12.81	44.81	2.68	42.13
2014	35.36	13.30	48.66	4.27	44.39
2013	37.60	13.22	50.82	4.92	45.90

Development of milk production costs in Germany 2010 - 2016

year*	2010	2011	2012	2013	2014	2015	2016
production costs in ct/kg	41.44	42.05	44.08	45.90	44.39	42.13	41.17
farm gate milk prices in ct/kg**	31.89	35.92	32.90	38.75	38.78	30.53	27.93
price/cost ratio	0.77	0.85	0.75	0.84	0.87	0.72	0.68
shortfall in %	23	15	25	16	13	28	32
MMI (index)	100	101	106	110	107	101	99

* As from 2014 new basis for calculations FADN 2015; extrapolation for 2016 updated on the basis of FADN 2015

** All milk prices for 4% fat and 3,4% protein, sources: prices of collected raw milk and prices of conventional cow's milk, in: Statistical yearbook and Statistical monthly reports BMEL, different years, www.bmel-statistik.de, ed. Bundesministerium für Ernährung und Landwirtschaft (Federal Ministry for Food and Agriculture, Germany)



(Source: trend calculations by the BAL based on Destatis and FADN data)

The current results also serve as a basis for the calculation of the Milk Marker Index (MMI) and the price/cost ratio. The MMI reflects the development of milk production costs, while the price/cost ratio shows to which extent farm gate milk prices allow to cover production costs.

Milk Production Costs 2016

→ The Netherlands



In 2016, the production costs for one kilogramme of milk in the Netherlands were 42.66 cents, representing a slight increase compared to the previous year.

Milk prices, on the other hand, were 2 cents down on 2015 at 28.75 cents, meaning that only 67% of the producers' costs were covered.

Milk production costs in the Netherlands in cents per kg (based on FADN 2015)

year	paid costs	+ income rate	= total costs	- subsidies	= production costs
2016	35.52	9.31	44.83	2.17	42.66
2015	35.32	9.31	44.63	2.17	42.46
2014	38.73	9.85	48.58	2.11	46.47
2013	37.30	9.88	47.18	2.61	44.57

Development of milk production costs in the Netherlands 2010 - 2016

year*	2010	2011	2012	2013	2014	2015	2016
production costs in ct/kg	39.96	43.05	42.96	44.57	46.47	42.46	42.66
farm gate milk prices in ct/kg**	30.75	34.22	32.38	37.40	38.90	30.75	28.75
price/cost ratio	0.77	0.79	0.75	0.84	0.84	0.72	0.67
shortfall in %	23	21	25	16	16	28	33
MMI (index)	100	108	108	112	116	106	107

* As from 2016, trend calculations by the BAL (Büro für Agrarsoziologie und Landwirtschaft) on the basis of FADN 2015, Eurostat 2016; the provisional values of 2014 and 2015 have been replaced by real costs calculated on the basis of FADN 2014/2015

** All milk prices for 3,7 % fat, source: Price Information Desk (LEI)



(Source: trend calculations by the BAL based on Destatis and FADN data)

The current results also serve as a basis for the calculation of the Milk Marker Index (MMI) and the price/cost ratio. The MMI reflects the development of milk production costs, while the price/cost ratio shows to which extent farm gate milk prices allow to cover production costs.



Cost study methodology and data

The data used for the cost calculations is universally applicable. It is official accounting data for specialised dairy farms included in the surveys carried out by the EU Farm Accountancy Data Network (FADN). This data is collected and verified by national liaison agencies (usually research institutes of the country's Ministry of Agriculture) and then forwarded to the European Commission.

The FADN and the sample of agricultural holdings on which it is based is the only representative data source that provides economic and structural figures about commercial agricultural holdings. The calculations commissioned by the EMB are based on the same sources also used by the EU for their agronomic analyses.

The sample holdings included in the FADN are chosen so as to provide a representative picture of the real economic structures of dairy farms. In addition to farm structural characteristics (number of employees, area, herd size, livestock units, etc.), the FADN also includes important figures from the farms' profit and loss statements. Thus, all key variables from specific and non-specific costs are available and are considered in the cost calculations (see *Overview 1, p. 20/21*).

The used data is only representative for commercial specialised dairy farms. This means that the evaluation consciously excludes smaller mixed farms focused on milk production as well as part-time farms.

Timely and regular – the need for information about current costs

The availability of timely, regularly-updated data and cross-cutting analyses about cost developments is very important to the dairy farmer associations in the EMB. Only with this kind of information would it be possible for them to take appropriate action at the agro-political level, rather than reacting too late. This information is becoming

increasingly important for active farms to be able to orient their production strategies to the economic reality. If they are part of a producer organisation, this information can help them demand appropriate prices when negotiating with milk buyers.

Knowledge about production costs is also a fundamental requirement from a business point of view. Furthermore, it must also be possible to base price negotiations on actual costs. However, this is where a major issue lies: Dairies and farmers usually do not decide on prices in advance. For dairy farmers, it is almost impossible to negotiate a price that is actually based on production costs with a dairy. They are ultimately paid whatever processing facilities can spare. If supply outstrips demand and dairies see their revenues shrink, dairy farmers end up bearing the brunt of these losses. It is also difficult for milk producers to control supply because there are no overarching, common market mechanisms in place.

The EU also publishes data about the cost situation on a yearly basis. The EU Dairy Farms Report published by the European Commission provides information about the EU milk production countries based on FADN data. These analyses serve as an important tool for political institutions in their decision-making as well as strategy development. However, they represent a major shortcoming in terms of timeliness of data. The latest EU report from 2016 is only an evaluation of accounting data from 2013 and provides a very limited analysis of trends in milk production costs that stops at 2014 (European Commission 2016)³. Considering the highly-volatile developments on the dairy market, these statistical conclusions are therefore outdated. They have very little to do with the current economic reality on dairy farms.

Extrapolating production costs to 2016

The EU accounting data in its current form is not enough to provide a real-time cost overview. Until 2016, data was only available for a period dating back three years. While the EU has started providing preliminary data for a more recent period as of this year (in 2017 for the accounting year 2015), this still does not allow for an up-to-date representation of costs.

In order to provide a timely as well as regularly updated cost calculation, the BAL has developed an extrapolation methodology (analogue methodology). It is based on the

price indices regularly published by Eurostat for the key agricultural inputs in milk production. This includes seeds, fertilizers, plant protection products, bought-in feed, machine and equipment maintenance as well as energy and revenue from beef production. The extrapolation does not simply add or subtract the current price differences. It, in fact, mathematically simulates how dairy farms have modified their spending due to price changes by looking at similar price situations from the past

The labour cost of milk production – sufficient recognition is the need of the day

Being a dairy farmer today is a demanding task. Not only does this profession require specialised knowledge about animal rearing, farming and fodder cultivation, as well as maintenance of highly technical and sensitive machines and equipment; business management skills are also necessary to be able to run a dairy farm. This profession also comes with the responsibility of producing high-quality milk for consumers and other users. Furthermore, the necessary constant care for animals is very labour-intensive.

Technical cost studies deal with the reporting of labour costs in milk production in very different ways. There are different approaches to the valuation of labour. However, the chosen methods often do not represent an appropriate benchmark from the point of view of milk producers. The

value of labour is usually assigned using a generic standard for an hour of work that, nonetheless, does not consider qualifications or actual field of work at all. For example, the European Commission equates the value of an hour of work by a self-employed dairy farmer with that of external labour hired to work on the farm, and thus calculates the farm's spending in terms of wages and imputed labour costs. However, there is no differentiation between the kind of employment and level of qualification (e.g. seasonal workers, temporary help for simple tasks, etc.) nor field of work. As a result, past experiences have shown that the imputed labour costs in recent years have not even been in line with the minimum wage.

³ European Commission 2016, EU Dairy farms report based on 2013 FADN

The majority of dairy farms are family-run and the required work is carried out by family members. Therefore, it is important to determine an appropriate benchmark to decide on the value of the work done by them. The labour costs of self-employed dairy farmers are determined in the EMB cost calculation using an independent wage variable. The nationally-applicable collective agreements (agricultural sector) are used as a reference and benchmark to determine the value of an hour of work carried out by the farm manager and the contributing family members.

Employer contributions are also included in the wage variable because dairy farmers would have to bear these social costs if they were to hire someone instead. Such collective agreements lend themselves perfectly to such a differentiated valuation of labour costs on farms on the basis of qualifications and area of responsibility. Not only is the implemented methodology recognised, it also represents standards for the valuation of labour adopted collectively by self-employed farmers in their role as employers with employees.

Table 8: Collective references on appropriate monetary valuation of work done on family dairy farms

Country	Reference system ⁴
Belgium	Wage categories chosen according to the qualification levels of the farm manager and family workers, based on the basic wage of the Joint Committee for the agricultural sector / green sectors, combined with a wage index.
Denmark	National collective agreements in the agricultural sector: wage group for managerial functions (farm manager) as well as basic wage for workers (family labour)
France	1.5-times the legal minimum wage (SMIC – salaire minimum interprofessionnel de croissance) Minimum wage committee (Commission nationale de la négociation collective). The calculation of working time in the present study is based on the results of a representative study on working time in dairy farms, conducted and published by IDELE France.
Germany	Collective agreements in the agricultural sector in the different Länder: Wage group for managerial functions (farm manager) as well as basic wage for workers (family labour)
Netherlands	System of job valuation based on market information about the rate of remuneration of agricultural employees (Employers' association)

How many hours does it take to run a dairy farm?

To answer this question, no appropriate recording of working time is actually available. Therefore, the cost calculations have stuck to the standards set by FADN and the national farm accountancy networks (see Table 9).

These set working hours are not derived from real recordings of working times. They are usually based on the nationally-agreed working time per Family Work Unit (FWU).

The reference system chosen by the European Commission provides a very different number of working hours from country to country as the basis to calculate labour costs. A direct comparison of labour costs between countries is, therefore, not possible. The number of working hours set for French dairy farmers, in particular, is significantly below

that of the other EU countries because the collectively-agreed working time of 35 hours per week is the norm. A family worker in the agricultural sector in France is only assigned about 1,500 hours per year. In comparison, however, many other studies on milk production in France have assigned 2,800 hours of work per family worker. As a result, the wage variable changes from 18.70 cents per kilogram of milk produced (for 2,800 hours/FAWU) to 10.74 cents per kilogram (1,500 hours/FAWU). For this reason, when updating the study on production costs in France for the year 2017, an improved method was introduced for the calculation of working time in dairy farms in France. The results for 2016 were adapted on the same basis.

The cost calculations of BAL assume that the farm manager is a full-time employee on the dairy farm. The additional working hours are assigned to family workers. Calculated using the outlined base rates, the derived hourly wages

⁴ You can find detailed information about this calculation in the national cost reports at: <http://www.europeanmilkboard.org/milk-production-costs.html>.

are presented in *Table 10*. These hourly rates are the basis for the calculation of the wage variable and are eventually converted to a rate per kilogram of produced milk (see results).

FADN records the number of working hours for the farm as a whole. Therefore, the cost study of BAL only considers the percentage of labour costs that result from milk production (*reported under Allocation 3, Calculation Diagram, p. 20/21*). The considered percentage is, at the end of the day, dependent on the different degree of dairy farm specialisation in the five countries.

One of the tasks for the future shall be to engage in a constructive discussion with the European Commission and develop more realistic valuation methodologies for the number of working hours and value of the work done by self-employed dairy farmers. Cow herds require all-round care throughout the year. In every country, family members running their own farms contribute to the running of their business on a daily basis.

Table 9: Working hours of family workers on dairy farms determined by the European Commission

Country	Number of family workers recorded in FADN (in FAWU) ⁵	Total hours of work set for all FAWU	Set number of work hours per FAWU (Total hours/FAWU)
Belgium	1.75	4,581	2,618
Denmark	1.19	2,584	2,171
France	1.65	2,644	1,602
Germany	1.47	3,464	2,356
Netherlands	1.54	3,630	2,357

Table 10: Working hours used in the BAL cost calculations

Country	Hours by farm manager	Hours by family workers	Imputed wage variable/hour	Wage variable in cents/kg	Percentage of income from milk production
Belgium	2,618	1,963	€19.60	14.71	85%
Denmark	2,171	412	€29.94	4.07	82%
France	- ø for both: 3,493 -	-	€22.17	14.21	73%
Germany	2,356	1,108	€17.40 to 22.16 (according to Länder rate)	12.81	54-77% (according to Länder rate)
Netherlands	2,357	1,273	€22.47	9.31	85%

Overview 1: Diagram for reporting of milk production costs adjustments to FADN/EU

Cost heading

Specific costs

Bought-in feed for grazing livestock (1)

Home-grown fodder
 — Seeds
 — Fertilizers
 — Plant protection products
 — Other specific forage production costs

Other specific livestock costs (Veterinary costs, etc.)

Non-specific costs

— Building + machine upkeep
 — Energy
 — Wages
 — Other direct costs
 — Taxes and other dues

Wages paid, rent paid, interest paid

Depreciation

Family labour costs

Subsidies

Land/capital costs

Allocation

Specific costs

Percentage of dairy cows + cattle/ grazing livestock (2)

Percentage of dairy cows + cattle/ grazing livestock



Percentage of area used for fodder crops/total area (2)

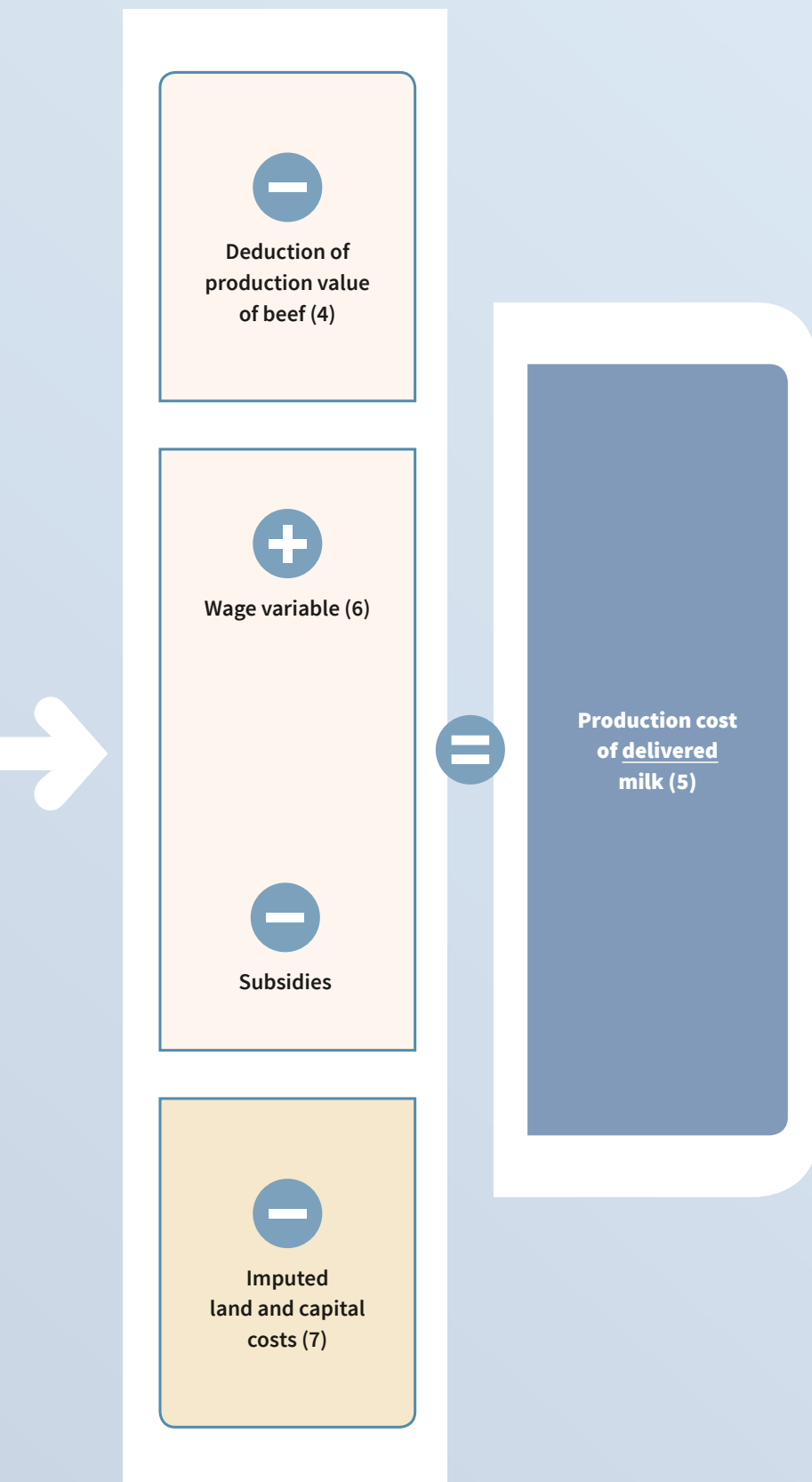
Percentage of dairy cows + cattle/ total livestock units (2)

Non-specific costs

Production value of milk + beef/
 Total production value minus in-house consumption (3)

Production value of milk/
 Total production value minus in-house consumption (3)





Adjustments/Legend

- 1: The cost of bought-in feed is derived from the total costs for grazing livestock. The EU uses individual figures.
- 2: The allocation of costs for bought-in feed and home-grown fodder as well as other specific livestock costs refer to all cattle on the farm. The EU refers to the number of dairy cows.
- 3: The allocation for these cost groups is derived by dividing the production value of milk (and beef) by the total production value minus in-house consumption. The EU also includes milk subsidies and total subsidies in this allocation, but does not include beef.
- 4: The EU system does not deduct complementary revenue from the co-product beef.
- 5: The costs are calculated for delivered milk and not the farm's total milk production (as is done by the EU).
- 6: Wage variable: This report uses an independent variable to calculate the labour costs of self-employed farmers.
- 7: The imputed land and capital costs are indicated separately from total milk production costs.

Overview of publications on milk production costs in Europe

Country	Calculation status	Type of publication	Languages available
Belgium			
	2016	Update of the study on milk production costs in Belgium	DE, FR
	2016	Short version of the study	DE, FR
	2016	Data sheet of the study	DE, EN, FR
	2014	Study on milk production costs in Belgium	DE, FR
	2014	Short version of the study	FR, NL
Denmark			
	2016 (forthcoming)	Data sheet on milk production costs in Denmark	DE, EN, FR
	2015	Data sheet on milk production costs in Denmark	DE, EN, FR
	2014	Data sheet on milk production costs in Denmark	DE, EN, FR
France			
	2016–2017	Update of the study on milk production costs in France (on the basis of FADN 2015)	DE, FR
	2013	Study on milk production costs in France (on the basis of FADN 2009)	DE, FR
	2013	Short version of the study	FR

Country	Calculation status	Type of publication	Languages available
Germany			
	July 2017	Data sheet on milk production costs in Germany	DE, EN, FR
	July 2017	Data sheet on milk production costs in Germany	DE, EN, FR
	April 2017	Data sheet on milk production costs in Germany	DE, EN, FR
	January 2017	Data sheet on milk production costs in Germany	DE, EN, FR
	October 2016	Data sheet on milk production costs in Germany	DE, EN, FR
	July 2016	Data sheet on milk production costs in Germany	DE, EN, FR
	April 2016	Data sheet on milk production costs in Germany	DE, EN, FR
	January 2016	Data sheet on milk production costs in Germany	DE, EN, FR
	2016	Update of the study on milk production costs in Germany (on the basis of FADN 2014/2015)	DE
	2015	Update of the study on milk production costs in Germany (on the basis of FADN 2013)	DE
	2014	Update of the study on milk production costs in Germany (on the basis of FADN 2012)	DE
	2012	Study on milk production costs in Germany (on the basis of FADN 2009)	DE, EN, FR
	2012	Short version of the study	DE, EN, FR
Luxembourg			
	2015	Study on milk production costs in Luxembourg	DE
	2015	Short version of the study	DE
Netherlands			
	July 2017 (forthcoming)	Data sheet on milk production costs in the Netherlands	DE, EN, FR
	2016 (forthcoming)	Data sheet on milk production costs in the Netherlands	DE, EN, FR
	2015	Data sheet on milk production costs in the Netherlands	DE, EN, FR
	2014	Data sheet on milk production costs in the Netherlands	DE, EN, FR
	2013	Study on milk production costs in the Netherlands	DE, NL

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