Work Package 2
Deliverable 2.2

Scientific assessment of the level of improvement to the welfare of transported animals following modifications to the CPs

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This report is an official deliverable of the High Quality Control Post project.

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The project "Renovation and promoting high quality control posts in the European Union" foresees a significant improvement of the equipment as well as the management of 12 Control Posts (CPs) located at the cross roads of important flows of animals transported over long journeys in the EU.

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INTRODUCTION

According to Regulation (EC) No 1/2005, Control Posts (CP) aim at ensuring that resting animals during transport are kept in good welfare condition while maintaining their animal's health status. The current work package developed a practical tool for assessing the welfare of transported animals in the CPs and this welfare protocol has been used to determine the level of improvement of the CPs due to renovation. The welfare assessment protocols cover the transport of cattle and pigs and are based on the assessment systems developed by the Welfare Quality® project. The welfare assessment starts at arrival of the animals at the CP, include unloading, resting and loading at the CP and the fitness of the animals to continue the travel to destination.

Methodology

The project started with 12 CPs. On each CP 15 welfare assessments before and 15 after renovation had been planned. Unfortunately, four (see Table 1) of the CPs abandoned, and 2 were replaced by other CPs, delaying the renovation period and hampering the assessments. Furthermore, the bad weather conditions delayed the renovation activities in some CPs. Before renovation assessments were also reduced due to the low number of stops of transported animals at the studied Cps. Finally a total of 84 transports of cattle and 23 of pigs were assessed (see Table 1 for the distribution). Hereafter transport or assessment will be used as synonyms.

The animal welfare assessments have been carried out at 3 stages of the animals in the CP:

1. During unloading: number of animals that fall or slip, or show fear reactions, turning back or reluctance to move;
2. In the resting pens: health and social behaviour.
3. During loading (vocalizations, slipping falling).

Both the cattle and the pig's protocol are described in Deliverable 2.1 and are based on the four welfare principles of the Welfare Quality project. Tables 2 and 3 show the animal based measures considered for cattle and pigs respectively. Resource and management based measures are included in deliverable 2.3 as risk factors for animal welfare.

Before carrying out the assessments the official veterinarians of all the control posts involved in the project have been trained in the animal welfare protocols. These training courses have had duration of two days with classroom sessions and practical training in control posts.
The assessments have been carried out by the trained official veterinarians and in some cases directly by the researchers. The assessment started one hour before the arrival of the truck with the assessment of the resource based indicators. When the truck arrived at the CP and the unloading started all the animal based measures related to it were registered. One hour after unloading the animals were assessed in the resting pens. Finally one or two hours before departure, depending on the sample size, animals were assessed again in the resting pens and during uploading.

Table 1: Name of the CPs and number of assessments carried out before and after renovation per species and per country.

			Number of assessments	
Country	**CP Name**	**Species**	**Before renovation**	**After renovation**
ITALY	Moglia	Pigs	7	0
	Tomasetti		abandon	
	Prioglio	Cattle	7	11
	Siciliani		new	
SPAIN	Vilarta	Cattle	abandon	
	Miranda		3	abandon
FRANCE	Qualivia	Cattle	10	11
	Bardy Bresse		8	8
	ADN	Pigs	new	
	Cooperl		new	
POLAND	Zbuczyn	Pigs	14	2
		Cattle	2	11
GERMANY	Hefter		abandon	
	Wacht	Cattle	11	2

The data have been collected for different animal categories and during different seasons of the year. As has been stated in the beginning of this report the number of assessments was different before and after renovation. Therefore, the analysis carried out with the data has a descriptive nature, presenting the mean, minimum and maximum percentages as range references for the indicators before and after renovation, as has been decided in the last Advisory Board Meeting (see deliverable 6.4)

Table 2 Animal based welfare measures of the cattle control post protocol. At arrival during unloading, 1 h after arrival, 1 hour before loading in the pen, and during loading.

	Welfare criteria/measure		**Unloading**	1hour After unloading	1 hour before departure	**Loading**
Good feeding	1	Body condition score.	-	x	x	
	2	Animals using water points	-	x	x	-
Good housing	3	Cleanliness of the animals Number of animals standing, lying walking feeding and ruminating	-	x	x	-
	4	Shivering, panting, sweating	-	x	x	-
	5	Slipping, falling. lameness	x x	- x	- x	x x
Good health	6	Integument alterations	-	x	x	-
	7	Hampered respiration, nasal discharge, coughing ocular discharge, diarrhoea, mortality.	-	x	x	-
Appropriate behaviour	9	Social behaviour.	-	x	x	-
	11	Vocalizations	-	x	x	x

Table 3 Animal based welfare measures of the pigs control post protocol. At arrival during unloading, 1 h after arrival, 1 hour before loading in the pen, and during loading.

	Welfare criteria/measure		**Unloading**	1hour After unloading	1 hour before departure	**Loading**
Good feeding	1	Food provision.	-	-	-	-
	2	Water supply.	-	-	-	-
Good housing	3	Absence of manure on the body.	-	x	x	-
	4	Shivering, panting.	-	x	x	-
		Huddling.	-	x	x	-
	5	Slipping, falling.	X	-	-	-
Good health	6	Wounds on the body	-	x	x	-
	7	Sick animals, dead animals,	X	-	x	-
		Coughing, sneezing.	-	x	x	-
Appropriate behaviour	9	Social behaviour.	-	x	x	-
	10	Exploratory behaviour.	-	x	x	-
	11	Fear to humans.	-	x	x	-
		Vocalizations	-	-	-	x
	12	Reluctance to move and turning back.	X	-	-	-

RESULTS AND DISCUSSION OF THE CATTLE ASSESSMENTS

A total of 5 CPs were assessed, 2 in France and one in Italy, Germany and Poland. A total of 84 transports were assessed, 41 before and 43 after renovation (see Table 1). Three cattle categories were assessed: calves, heifers, steers. Table 4 presents a general view of the number of cattle transported from the country of origin and the final destination. Calves were transported from Ireland, Romania and the UK, and rested in CPs in France and Italy. Heifers were transported from France, Germany, Ireland and UK, and rested in CPs in Spain, France, Germany and Poland. Steers came from Ireland and rested in a CP in France and adult cattle came from Germany and Slovakia and made a stopover in Polish CP. Table 5 shows the mean number of animals per truck transported per each category assessed. Steers were assessed only at Bardy Bresse; calves were assessed at Qualivia and Prioglio and heifers at Bardy Bresse, Qualivia , Wacht and Zbuczyn

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Table 4 Total numbers of cattle transported the country of departure and the final destination.

FROM/TO	AZ	HU	IT	KZ	MO	RO	SP	NL	TU	TOTAL
AT						65				**65**
FR					32					**32**
DE	198									**198**
IR		47	500	523		100		4,473	285	**5,928**
RU							3540			**3,540**
SK						90				**90**
NL	33				64	31				**128**
UK						83	236			**319**
TOTAL	**231**	**47**	**500**	**523**	**96**	**369**	**3,776**	**4,473**	**285**	**10,300**

AT= Austria FR=France DE=Germany IR=Ireland RO=ROmania SK=Slovakia NL= The Netherlands UK= United Kingdom AZ= Azerbaijan HU= Hungry IT= Italy KZ= Kazakhstan MO= Morocco SP= Spain TU=Tunisia

Table 5 Mean and standard deviation of number of animals per truck for each category assessed before and after renovation.

	Before renovation		**After renovation**	
Animal category	Mean	std	mean	Std
Steers	54.5	12.8	58.2	3.1
Calves	220.2	35.5	244.9	66.9
Heifers	38.3	5.4	35.5	10.9

UNLOADING AND LOADING

Table 6 shows the average, min and max percentage of animals that slip, fall down, are lame or vocalize during unloading and loading, before and after renovation. The results for adult cattle for unloading and loading are presented together because the same indicators are assessed in both stages. In all CPs the ramps have been improved, either by installing new solid fixed ramps with the correct slope or by inserting mobile ramps. The improvement of the ramp of the CPs is reflected in the averages and range differences for these indicators before and after renovation. All animal based measures, such as slipping, falling down, lameness and vocalisations, show an important improvement due to the improvement of new installation of these ramps.

Table 6 Percentage of animals slipping falling down, lame and vocalizing during unloading and loading.

		before renovation			after renovation		
	% of animals	avg	min	max	avg	min	Max
Unloading	slipping	12.2	0.5	58.1	5.6	0.0	27.7
	falling down	1.3	0.0	12.5	0.9	0.0	6.2
	lameness	0.2	0.0	5.0	0.0	0.0	0.4
	vocalisation	11.5	0.0	99.4	3.8	0.0	13.3
Loading	slipping	6.9	0.0	45.2	3.5	0.0	57.9
	falling down	1.1	0.0	9.7	0.4	0.0	8.2
	lameness	0.2	0.0	3.3	0.0	0.0	0.0
	vocalisation	10.2	0.0	57.6	2.6	0.0	19.2

RESTING PENS: After arrival and before departure

After unloading and before loading animals are assessed in the resting pens in order to assess their social behaviour. In table 7 the percentage of agonistic and cohesive events are presented by animal category and before and after renovation of the pens. In almost all CPs the number and quality of the drinking bowls and of the feeding trough have been increased. Another important part of the renovation regarded the insulation of the roofs which have improved the climatic conditions of the stables. In the Bardy Bresse CP the pens have been enlarged.

Even while the data are only descriptive, a remarkable difference occurred between the agonistic behaviour assessed one hour after arrival and one hour before departure in steers. Although at a lower level, a similar difference was recorded for heifers, but not for calves that had a low frequency of agonistic behaviour. All categories showed less agonistic behaviour after renovation. These results clearly show that agonistic behaviour of the observed animals decreased significantly due to the relevant renovation of the pens.

Cohesive behaviour is more difficult to establish. After arrival this parameter for steers deteriorates, but improves before departure. For heifers cohesive behaviour is worse before renovation after arrival and better after renovation before departure and for calves cohesive behaviour seems to be worse after renovation. Hence, this parameter does not produce a clear evidence of the effect of renovation on this aspect of social behaviour.

Table 7 Percentage of animals showing agonistic and cohesive behaviours assessed in the resting pens for the different categories after arrival and before departure and before and after renovation.

% animlas		BEFORE		AFTER	
	category	agonistic	cohesive	agonistic	Cohesive
After arrival	Steers	42.7	18.1	10.9	2.9
	Calves	2.0	6.5	0.9	3.5
	Heifers	20.9	8.8	2.8	9.8
Before departure	Steers	6.7	9.2	4.0	9.7
	Calves	2.0	3.1	0.3	2.4
	Heifers	4.2	11.8	0.0	10.0

Table 8 shows the general activity of the animals in the resting pens as a picture of what animals are doing 1 hour after arrival and one hour before departure in the resting pens. A positive impact of the renovation is demonstrated by the higher percentage of animals that are lying in the pens in the renovated pens. This percentage is increasing from 11.8 up to 30.9% after one hour from the arrival of the animals in the CP. Before departure this percentage increases further up to 45.5%. Positively correlated to this is that after arrival in the new pens the percentage of animals that are standing is 44.9% compared to 73.5% in the "old" pens. In general after travelling long distances animals arriving in Control Posts are more active at arrival because they are feeding and drinking and at the end of the resting period they are less active and show more resting behaviours. If we compare this phenomenon after renovation we encounter these differences again after arrival and before departure, but after arrival in the new pens they are less feeding and drinking than in the old pens.

Table 8 Percentage of animals lying, standing, walking, feeding, ruminating and using the water points in the resting pens 1 hour after unloading and 1 hour before departure before and after renovation

	% of animals	before renovation			after renovation		
		Avg	min	Max	avg	min	max
aft unload	Lying	11.8	0.0	73.1	30.9	0.0	91.7
	Standing	73.5	4.3	100.0	44.9	4.8	100.0
	Walking	11.0	0.0	100.0	10.7	0.0	39.0
	Feeding	30.3	0.0	100.0	21.7	0.0	100.0
	Ruminating	4.8	0.0	36.4	6.4	0.0	30.3
	using water points	9.7	0.0	38.7	7.8	0.0	26.6
before load	Lying	43.2	0.0	90.9	45.4	0.5	100.0
	Standing	44.1	0.0	95.0	16.5	0.0	76.6
	Walking	4.3	0.0	23.4	8.5	0.0	44.0
	Feeding	13.8	0.0	55.0	6.1	0.0	28.1
	Ruminating	18.6	0.0	55.3	20.5	0.0	100.0
	using water points	3.9	0.0	46.0	5.7	0.0	44.0

In table 9 health indicators are shown. The percentages of signs of diseases are generally low. Animals that travel long distances are inspected by official vets before loading on the farm or in the assembly centre and animals unfit to travel are not supposed to be a the truck. Comparing the averages we notice that after renovation all the percentages of diseases decline to even lower levels. In particular the percentage of animals which are coughing decline significantly from more than 3% down to below 1%. Before renovation there are some maximum values that may be considered high as 12.7% of nasal discharge and 18.3 % of coughing, but these values may be overestimated health problems, because when assessed one hour before departure the maxima are considerably lower while it is not to be expected that sick animals will have recovered to such an extent. Only one dead calf in the pens was registered in Qualivia after renovation and 5 before renovation (3 in Prioglio, 2 in Qualivia).

Table 9 Percentage of animals with different health indicators before and after renovation

	% animals	before renovation			after renovation		
		avg	min	max	avg	min	max
after unload	hampered respiration	0.3	0.0	5.0	0.1	0.0	1.1
	nasal discharge	1.0	0.0	12.7	0.2	0.0	2.8
	ocular discharge	0.7	0.0	4.2	0.2	0.0	3.1
	Diarrhoea	0.2	0.0	2.8	0.1	0.0	1.5
	animals coughing	3.7	0.0	18.3	0.7	0.0	5.3
before load	hampered respiration	0.1	0.0	3.1	0.1	0.0	1.3
	nasal discharge	0.9	0.0	6.7	0.2	0.0	2.7
	ocular discharge	0.3	0.0	4.7	0.4	0.0	6.0
	Diarrhoea	0.3	0.0	3.7	0.1	0.0	1.0
	animals coughing	3.1	0.0	12.1	0.9	0.0	12.7

Body condition and dirtiness of the animals are presented in table 10. Body condition of animals travelling long distances is one of the conditions of fitness to travel and in both before and after renovation all most 100% of the animals showed normal body condition (see Table 10). In any case the table shows that the dirtiness is lower in the renovated pens compared to the old pens, which can be attributed to a better environmental condition of the animals in the new pens.

Table 10 Percentage of animals with the different scores for body condition and percentages of animals clean and dirty one hour after arrival and one hour before departure, before and after renovation

	% of animals	before renovation			after renovation		
		Avg	Min	max	avg	min	max
after unload	normal BCS (score 0)	96.5	1.4	100.0	98.9	90.9	100.0
	thin BCS (score 1)	3.5	0.0	98.6	0.1	0.0	0.8
	clean (= not dirty)	93.5	20.0	100.0	98.9	90.9	100.0
	Dirty	6.5	0.0	80.0	0.1	0.0	1.0
before load	normal BCS (score 0)	98.8	81.3	100.0	98.9	90.9	100.0
	thin BCS (score 1)	1.2	0.0	18.8	0.0	0.0	0.6
	clean (= not dirty)	92.2	20.0	100.0	98.9	90.9	100.0
	Dirty	7.8	0.0	80.0	1.1	0.0	1.5

RESULTS AND DISCUSSION OF THE PIGS ASSESSMENTS

A total of 23 transports of pigs travelling long distances were assessed (see Table 1): seven arriving to Moglia in Italy, and 16 arriving to Zbuczyn in Poland. The control post of Moglia abandoned the project after the earthquake in Emilia of 2012 and no data after renovation are therefore available. This is why this CP is not included in the analysis.
The followings results are from the CP in Poland where data from before and after renovation are available. Table 11 shows the total numbers of pigs travelling, the place of departure and their final destination. The mean number of animals transported by truck during the before renovation

assessments was 62 ± 38 pigs and the mean number of animal after renovation were 226 ± 108 pigs. These were mainly breeding and fattening pigs.

Table 11. Number of pigs travelling, country of departure and destination of the pigs arriving in the CP of Poland.

From/to	Lithuania	Poland	Rusia	Russia	Ukraine	Total
Canada				333		333
Denmark	523			123	1881	2527
Hungary				170		170
Poland			310			310
The Netherlands		100				100
Total	523	100	310	626	1881	3440

UNLOADING

The percentage of animals slipping, falling, turning back and reluctant to move were counted only during unloading. The percentage of animals that vocalize was recorded during loading due to the time needed and the placing of the observer as the protocol was designed to be applied with only one assessor. Figures are presented in Table 12. Sick or dead animals were not found.
From the comparison of the averages there is no evidence that the renovation has had a relevant impact on these animal based parameters. The reason of this result is that in Zbuczyn the ramps did not need renovation as the existing ramps were already in a good state.

Table12. Percentage of animals slipping, falling, turning back, reluctant to move, sick or dead during unloading at the CP.

% of animals		Before renovation			After renovation		
		mean	min	max	mean	min	Max
Unloading	slipping	5.6	0.0	16.1	6.9	3.9	10.0
	falling	2.0	0.0	7.1	2.2	0.3	4.0
	turning back	5.1	0.9	12.9	6.5	1.9	11.0
	Reluctant	4.4	4.4	4.4	5.0	2.9	7.0
	Sick	0.0	0.0	0.0	0.0	0.0	0.0
	Dead	0.0	0.0	0.0	0.0	0.0	0.0

RESTING PENS: After arrival and before departure

The percentage of animals showing social behaviour, exploration, resting and others are presented in table 13. These percentages did not vary a lot between 1 h after arrival and 1 h before

departure. The renovation of the pens allowed the modification of the pen size according to the group sizes, avoiding the mixing of animals.
Comparing the averages of the groups of pigs before and after renovation it turns clearly out that positive social behaviour is more frequent in the renovated pens compared to the old pens. This occurs both after arrival and before departure. No relevant differences have been encountered for exploring behaviour and resting of the pigs, the first probably because the renovation did not imply the quantity of enrichment material.

Table 13 Percentage of animals showing positive, negative, explore and resting or others behaviours one hour after arrival and one hour before departure, before and after renovation

% of animals		Before renovation			After renovation		
		Mean	Min	max	mean	min	max
After arrival	Positive	16.0	4.9	31.8	32.8	30.6	35.0
	Negative	17.0	8.4	41.3	3.7	2.2	5.1
	Explore	21.5	12.3	31.2	21.8	20.2	23.5
	Resting	24.8	15.9	37.0	23.0	16.5	29.4
	Others	20.7	4.3	32.1	18.7	17.5	19.9
before loading	Positive	17.7	4.3	36.3	29.0	28.2	29.9
	Negative	12.5	0.7	35.1	4.1	2.3	5.8
	Explore	20.6	12.3	30.6	19.4	18.8	20.1
	Resting	32.3	21.2	59.0	25.0	23.0	26.9
	Others	16.9	3.0	24.0	22.5	19.0	26.1

Figures for wounds and manure on the body are shown in Table 14. Dirty animals (manure score 2) were observed before renovation but not after renovation. The amount of bedding in the pens was usually sufficient preventing to see the underneath floor, but in some cases (particularly for Zbuczyn before renovation) the amount was less (see deliverable 2.3). This may explain the improvement of the parameter. The presence of wounds is also showed in Table 14. Wounds score 1 and 2 were observed before renovation and only wounds score 1 in the assessments after renovation.

Table 14. Percentage of animals with wounds scored as 1 and 2 for and with manure one hour after arrival and one hour before departure, before and after renovation.

% of animals		Before renovation			After renovation		
		Mean	Min	Max	mean	Min	Max
After arrival	wound 1	8.9	0.0	21.7	12.6	4.0	21.3
	wound2	0.8	0.0	3.9	0.0	0.0	0.0
	manure 1	17.8	9.8	32.4	1.9	0.0	3.9
	manure 2	0.7	0.0	3.8	0.0	0.0	0.0
bef loading	wound 1	11.5	0.0	40.5	11.7	4.0	19.4
	wound2	2.1	0.0	9.8	0.0	0.0	0.0
	manure 1	11.7	0.0	27.5	21.3	0.0	42.6
	manure 2	1.9	0.0	18.9	0.0	0.0	0.0

Figures for pigs that showed thermal discomfort (shivering or panting) are presented in table 15. During the assessments carried out before renovation the mean ± standard deviation environmental temperature was 9.5 ± 2˚C and the mean of the temperature after renovation was 23.5 ± 0.7˚C. So the differences observed can be due to different ambient temperature and are not necessary related to the renovation.
The percentage of animals showing shivering and panting is low and very similar between 1h after arrival and 1 h before departure. This suggests good thermal comfort of the animals at arrival and before departure. However, the percentage of animals showing huddling (Table 16) was higher after arrival than before loading. Huddling behaviour might be a feasible indicator for the CP owners to set on the heating system. Of interest is that after renovation the huddling behaviour of the pigs was remarkably lower than before renovation. This can be attributed to the better environmental conditions in the renovated pens.

Table 15 Percentage of pigs shivering and panting after arrival and before departure before renovation.

% of animals		Before renovation			After renovation		
		mean	min	max	mean	min	Max
Aft arrival	% shivering	1,4	0,0	7,8	0,0	0,0	0,0
	%panting	2,6	0,0	11,7	0,0	0,0	0,0
before departure	% shivering	1,4	0,0	7,8	0,0	0,0	0,0
	%panting	2,7	0,0	12,0	0,0	0,0	0,0

Table 16 Percentage of pigs huddling per pen after arrival and before departure both before and after renovation

	Before renovation			After renovation		
%animas/pen	mean	Min	max	mean	min	max
After arrival	29.9	6.0	70.0	0.0	0.0	0.0
before departure	6.8	0.0	20.0	0.5	0.0	1.0

The percentage of animals showing sneezing and coughing is presented in table 17. As similar percentages are observed after arrival and before departure this indicates that it was not a condition related to the CP, but probably that some animals already arrived with a respiratory problem. The assessments before renovation were done in winter time and this may also explain the absence of these indicators in the after renovation.

Table 17 Percentage of animals showing coughing and sneezing after arrival and before departure and before and after renovation.

% of animals		Before renovation			After renovation		
		mean	min	max	mean	min	max
After arrival	coughing	4.2	0.0	25.0	0.0	0.0	0.0
	sneezing	5.0	0.0	33.3	0.0	0.0	0.0
before departure	coughing	6.5	0.0	31.7	0.0	0.0	0.0
	sneezing	6.4	0.0	40.0	0.0	0.0	0.0

LOADING

The percentage of animals that vocalize (table 18) after renovation is lower than before renovation and this may be related to the improvement of the handling of the animals. The percentage of events of vocalisation goes down from 54.8% before renovation to 35.3% after renovation.
Table 18 Percentage of events during 12 minutes where vocalizations were counted (20 sec scan sampling) and the percentage multiple (more than one animal) vocalizations.

Loading	Before renovation			After renovation		
	mean	min	max	mean	min	max
One/zero	54.8	11.8	79.4	35.3	11.8	58.8
Multi	55.7	8.8	79.4	88.2	88.2	88.2

Conclusions

The analysis presented in this report has the objective to assess the level of improvement of the welfare of the animals transported over very long journeys due to the renovation of the control posts. To this end animal welfare assessment protocols for cattle and pigs have been developed and applied in practice to assess the welfare of transported animals which in the renovated control posts have been assessed at arrival, during the resting period of 24 hours and at uploading on the trucks to continue their journey to the final destination. These assessments have been carried out before and after renovation in order to establish the level of improvement. Due to a series of problems related to the execution of the assessments it was not possible to carry out sufficient assessments to draw conclusions for each single control post and link the improvement of animal welfare to the specific nature of renovation of each control post. It was however possible to compare overall averages of animal welfare parameters measured before renovation and after renovation in all renovated control posts.

Before discussing the results it has to be highlighted that not all structural interventions may have a beneficial impact on animal welfare. Evident examples are the improvement of drivers facilities, and investments to ameliorate the discharge of manure and slurry and of the truck wash area. There have been although a series of improvements carried out in all control posts, which were specifically directed to improve the welfare of the animals during their stay in the control post such as:

1. The improvement of the ramps used for unloading and uploading of the animals on the trucks
2. The increase of the number and quality of the drinking bowls and feed troughs in the single pens of the stables
3. The insulation of the roofs of the stables against very hot and cold weather conditions
4. The improvement of existing and the installation of new ventilation systems
5. Installation of mobile gates able to create separate groups of animals

The animal welfare protocol for cattle and pigs is composed of a series of 12 animal based parameters measuring the level of feeding, the state of the animal due to good housing systems, the level of health and the degree with which the animals express appropriate behaviour.

For the last three principles (good housing, health and appropriate behaviour) the assessments of cattle show the following results:

1. At unloading and uploading and after renovation there is a significant reduction of the percentage of cattle slipping, falling down, presenting lameness problems and vocalising;
2. In the renovated resting pens cattle clearly showed less agonistic behaviour than in the old non renovated pens;
3. The percentage of cattle which are lying down in the pen after 1 hours after unloading is higher after renovation than before renovation;
4. In line with the previous observation the percentage of animals standing in the pens is much lower after renovation than before;
5. Although the percentage of animals presenting health problems is low, because they need to be fit for travelling, the animal health parameters, such as hampered respiration, nasal and ocular discharge and coughing, all have improved after renovation of the stables;
6. The dirtiness of cattle in the renovated pens is lower than in the old pens

These results clearly show than the renovation of the control posts has contributed to improve the welfare of cattle. The better internal climatic conditions due to the better ventilation equipment and the insulation of the roofs, the higher and better availability of drinking bowls and feed troughs and the improvement of the loading ramps all have been important improvements to achieve these results.

The analysis of the assessment of pigs before and after renovation could be carried out only in one control post, as other control posts hosting pigs either were completely new and started to operate as control post after renovation or have quitted the project. The assessments of pigs show the following results:

1. Positive social behaviour of pigs is more frequent in the renovated pens than in the old pens;
2. There is no evidence of more exploring behaviour as the provision of extra enrichment material was not foreseen among the interventions;
3. After renovation the huddling behaviour of pigs was remarkably lower than after renovation;
4. The percentage of pigs vocalising decreases after renovation, which can attributed to unloading and loading facilities, but also to the better handling of the pigs

Although for pigs the number of assessments before and after renovation are lower due to the indicated problems, also the results listed above point to an improvement of the welfare of pigs at un- and uploading and during the resting period in the pens.

The animal welfare assessment have proven to be feasible and both protocols were able to detect the differences related to the renovations of the CPs. After all the assessments were completed using the protocol on both species in different CPs it was decided to refine the protocol and reduce the time of the assessments. Some indicators were not necessary to be assessed one hour after arrival of the animals but only at departure which may reflect the effect on the welfare of the animals after resting in the CP.
The assessments done after arrival and before departure were useful to provide reference values and to decide which indicator were more related directly to the transport and which on the time spent in the control posts.
All the four principles were included in the assessments combining animal and resources based indicators. The results as presented in this report may be useful as reference values for other CPs or to be used to assess animals transported and housed in similar conditions arriving to assemble centres slaughter houses or markets. The results of these assessments will be useful to give a range of values for the different indicators and will be useful as a self-check method for the control post owners and an important tool that can be used by official vets to give advice about improving animal welfare.

References.

D 2.1. Animal welfare assessment protocols
Deliverable 1.1 Technical ex-ante reports on the state of art and the needs for improvement of the 12 CPs
Deliverable 2.3 Report addressing the risks to animal welfare of specific management and housing aspects at CPs