

# Animal Welfare Indicators; how we shape the future



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SCHOOL OF  
VETERINARY AND  
LIFE SCIENCES



# The Team

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# Overview

- Why the need for welfare indicators?
- What to measure?
  - Literature review
  - Survey stakeholders
- How can assessments be used in Australian live export?
  - Benchmarking

# The need for welfare assessment



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## Background

- to ensure a sustainable future
- to address increasing societal concern (MISP 2020)
- to enable industry to demonstrate care, and continuous improvement of welfare
- to add to current regulations (ASEL/ LGAP)
- *"Live export presents a singularly difficult problem for ensuring welfare"*



# Animal Welfare definitions



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## Background

- Animal Welfare is complex and multifaceted
- Social licence to farm



**A natural life  
(e.g. social  
behaviour)**

**Fitness  
(e.g. growth)**

**Biological  
Function**

**Subjective  
experience  
(feelings)**

**Natural  
Behaviour**

**Affective  
state**

# What to measure?

## Lit Review; Measures to include:

- Environment- resource- and animal-based
- Practical, low-cost, reliable, valid

## Purpose of assessment

- Compliance with legislation
- Welfare certification
- Management advice



## Assessment output

- A single assessment score
- Grading 0-3; prescriptive guide,



# Welfare assessment schemes (EU)



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## 1. Welfare Quality®

lesions,  
lameness,  
diarrhoea,  
dehorn,  
tail dock



aggressive  
behaviour,  
stereotypy, fear,  
Qualitative  
behavioural  
assessment

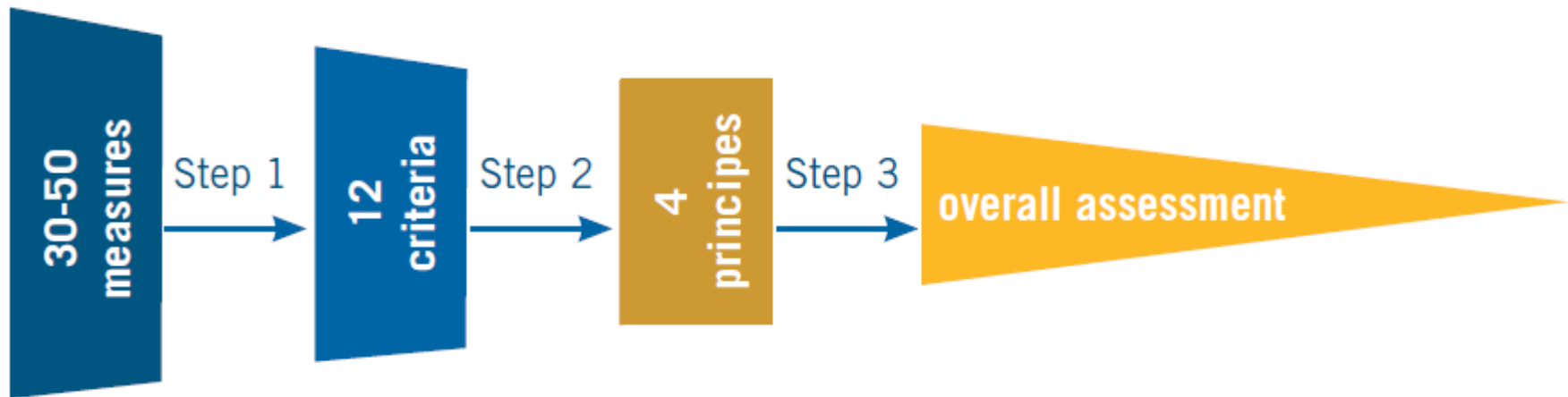
Principle	Welfare criteria	
Good feeding	1.	Absence of prolonged hunger
	2.	Absence of prolonged thirst
Good housing	3.	Comfort around resting
	4.	Thermal comfort
	5.	Ease of Movement
Good health	6.	Absence of injuries
	7.	Absence of disease
	8.	Absence of pain induced by management procedures
Appropriate behaviour	9.	Expression of social behaviours
	10.	Expression of other behaviours
	11.	Good human-animal relationship
	12.	Positive emotional state

community engagement

# Welfare Quality®

## Welfare assessment schemes (EU)

- On farm welfare assessment, assessors, expert panels





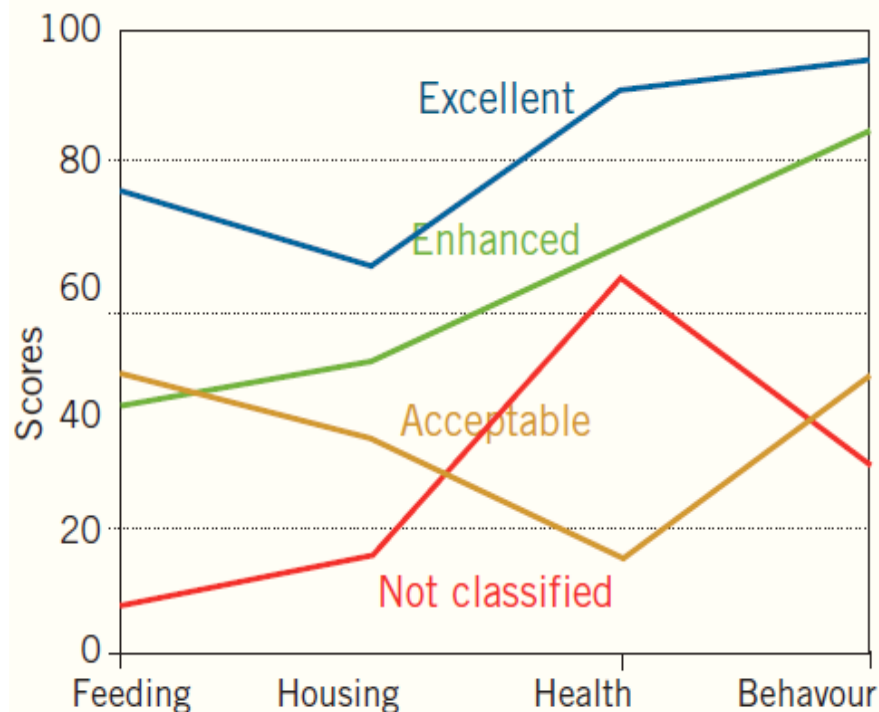
# Welfare Quality®



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Welfare assessment schemes (EU)

Output does not define 'normative' level of welfare



✓ mostly animal based measures  
✓ some domains relevant to consumers

✗ some measures not validated  
✗ on farm assessments are time consuming (7-9 h)

# 2. AssureWel



## Welfare assurance schemes

- Uni Bristol with industry
- <http://www.assurewel.org/>
- Hens, dairy, pigs
- Benchmarking tool

Advisory support & strategies

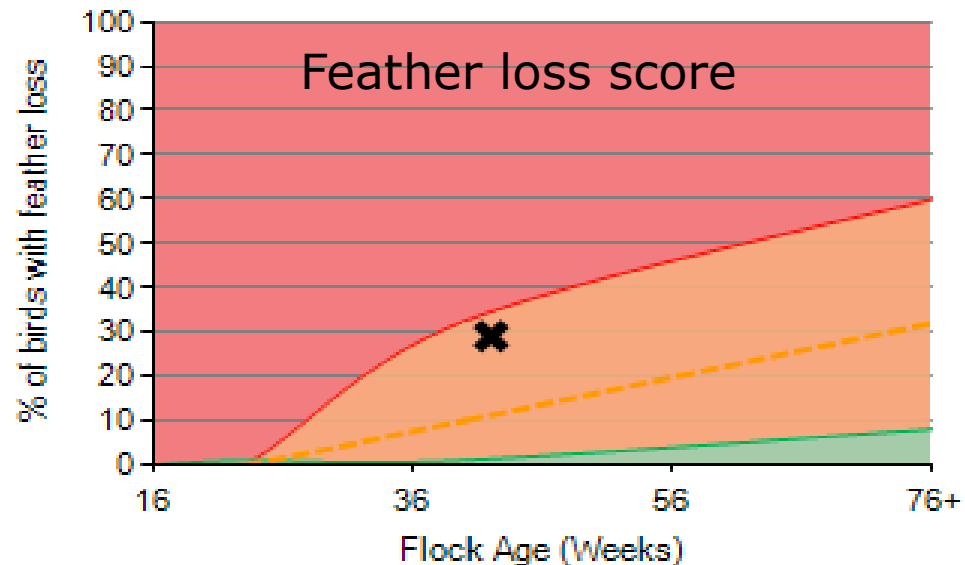
Laying hens | Dairy cows | Pigs | Broilers | Beef cattle | Sheep | Training | ...

AssureWel  
Advancing Animal Welfare Assurance

**New! AssureWel Benchmarking Tool**

Our New! AssureWel Benchmarking Tool allows you to compare your feather loss scores to other non-caged industry flocks\*, aids self assessment, and provides guidance on addressing risk factors and improving performance on feather cover.

\* Compares your scores to those collected during farm assessment visits on Freedom Food and Soil



# AssureWel (protocol under development)



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## Welfare assurance schemes

### Sheep

#### Individual measure

1. a) Lameness

#### Flock measures

1. b) Lameness: severely lame sheep
2. Body Condition Score (Thin sheep)
3. Dirtiness
4. Fleece loss
5. Sheep needing further care
6. a) Tail docking (docked short)

#### Records measures

6. b) Castration, tail docking and ear notching
7. Mortality

### Beef cattle

#### Individual measures

1. Lameness
2. Cleanliness
3. Body Condition Score (adult cattle only)

#### Herd measures

4. Hairloss or lesions
5. Swellings
6. Animals needing further care
7. Animals with respiratory symptoms

#### Records measures

8. Mortality
9. Dehorning and castration

# 3. AWIN welfare indicators



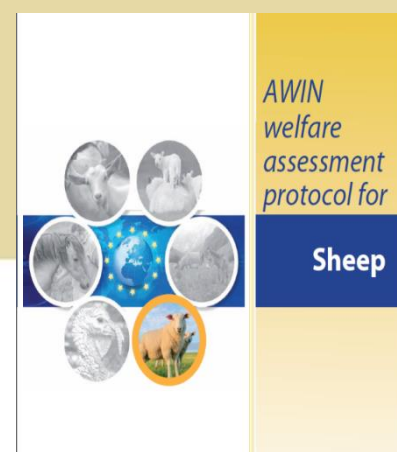
Welfare principles	Welfare criteria	Welfare indicators
Good Feeding	Appropriate nutrition	Body Condition Score lamb mortality
	Absence of prolonged thirst	Water availability
Good Housing	Comfort around resting	Fleece cleanliness
	Thermal comfort	Panting
		Access to shade/shelter (outdoors only)
	Ease of movement	Stocking density (housed animals only) Hoof overgrowth (housed animals only)
Good Health	Absence of injuries	Body and head lesions
		Leg injuries
	Absence of disease	Lameness
		Faecal soiling
		Mucosa colour
		Ocular discharge
		Mastitis and udder lesions (lactating ewes only)
Respiratory quality		
Fleece quality		
Absence of pain and pain induced by management procedures	Tail length	
Appropriate Behaviour	Expression of social behaviour	Social withdrawal
	Expression of other behaviours	Stereotypy
		Excessive itching
	Good human animal relationship	Familiar human approach test_
Positive emotional state	Qualitative Behaviour Assessment	

~30 indicators

Two stages/farm;  
 1. Flock level  
 2. Individual physical exam

<http://www.animal-welfare-indicators.net/site/>

# AWIN Assessment protocol sheep;



## Panting score

0: Normal respiration



Mouth closed  
~20 bpm

1: Mild heat stress



Mouth closed  
30-40 bpm

2: Panting



Mouth open  
>40 bpm

## lesion score

absent



present



## Water Check



# Welfare indicators review, UK abattoir: sheep

Llonch et al 2015



- 349 articles; 48 indicators
- 19 highly *valid*
- 9 highly *feasible*
- *None for long term distress, or short term hunger*
- for benchmarking or compliance

## Indicators

Carcass bruising

Body cleanliness

Diarrhoea

Skin lesions

Skin irritation

Castration

Ear notching

Tail docking

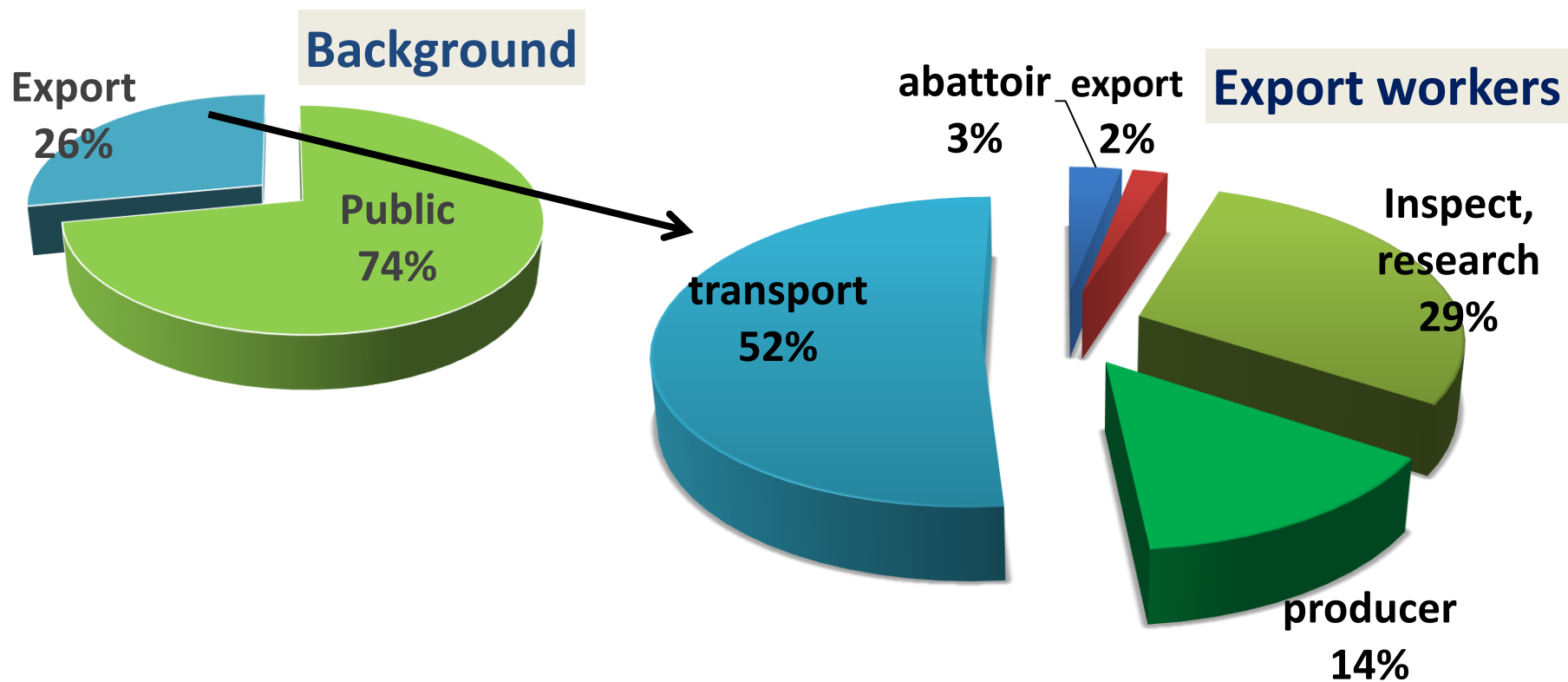
Obviously sick

Llonch, P., King, E.M., Clarke, K.A., Downes, J.M., Green, L.E., 2015. A systematic review of animal based indicators of sheep welfare on farm, at market and during transport, and qualitative appraisal of their validity and feasibility for use in UK abattoirs. *The Veterinary Journal* 206, 289–297.

# Survey Australian stakeholders 2015

921 participants

- shared and divergent views on use of indicators
- 60% (export) and 90% (public) want welfare performance data released



# Survey: ranking of measures

Stakeholder survey: 921 participants



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- Stakeholder groups ranked top measures similarly

	Importance		Practicality	
	Public	LEI workers	Public	LEI workers
1	Injury/wounds	Ventilation	Inability to stand	Ventilation
2	Inability to stand	Disease	Amount of shade	Injury/wounds
3	Disease	Injury/wounds	Injury/wounds	Inability to stand
4	Ventilation	Inability to stand	Ventilation	Death
5	Infection	Death	Disease	Disease
6	Lameness	Lameness	Death	Lameness
7	Death	Infection	Lameness	BCS
8	Parasites	Physiological status	Shelter from weather	Physiological status
9	Amount of shade	Parasites	Air temperature	Shelter from weather
10	Air quality	BCS	Infection	Amount of shade
11	Shelter from weather	Air quality	BCS	Air temperature
12	Behaviour	Amount of shade	Humidity	Infection
13	Air temperature	Shelter from weather	Air quality	Parasites
14	Physiological status	Behaviour	Weather	Body weight
15	Pain	Air temperature	Physiological status	Air quality
16	BCS	Faeces structure	Daily amount of light	Humidity
17	Nasal discharge	Pain	Parasites	Behaviour
18	Humidity	Nasal discharge	Behaviour	Faeces structure
19	Coughing	Humidity	Nasal discharge	Nasal discharge
20	Faeces structure	Weather	Noise	Weather
21	Respiration rate	Body weight	Body weight	Wool length
22	Weather	Respiration rate	Coughing	Coughing
23	Vocalisations	Coughing	Vocalisations	Daily amount of light
24	Body weight	Meat quality	Faeces structure	Meat quality
25	Daily amount of light	Wool length	Smell	Vocalisations



# Overview

- Background - Why measure welfare?
- What to measure?
  - Literature review
  - Survey stakeholders
- How can assessments be used in Australian live export?
  - Benchmarking a QA dashboard tool

# QA dashboard

(for benchmarking, real time improvements)

## Current indicators

(ASEL, ESCAS)

x20

(e.g. mortality,  
lameness,  
ventilation,  
temperature,  
stocking rate)

## New indicators

X26

Good feeding,  
housing, health and  
behaviour

(e.g. pen hygiene,  
shade, BCS, fear,  
behaviour)

Yet to  
develop

(positive  
mental  
state)

Practical, reliable, valid, relevant

# Daily Scoring assessment sheet



<b>PEN ID</b>		Date/time: <b>12/10/16</b>	Assessor: <b>Assessor 1</b>	<b>Environmental measures</b>		Wet bulb temperature:	Bedding temperature:					
Species: Circle one	Sheep <input type="checkbox"/>	<b>Cattle</b> <input checked="" type="checkbox"/>	Goat <input type="checkbox"/>	Breed:	Noise:	Air quality:	CO2 concentration:	NH3 concentration:				
Location:	On-farm <input type="checkbox"/>	In transit <input type="checkbox"/>	<b>Feedlot</b> <input checked="" type="checkbox"/>	On ship <input type="checkbox"/>	Air transport <input type="checkbox"/>	Quiet <input type="checkbox"/>	Medium <input checked="" type="checkbox"/>	Noisy <input type="checkbox"/>	Poor <input type="checkbox"/>	OK <input type="checkbox"/>	Good <input checked="" type="checkbox"/>	
Details: e.g. deck (truck/ship), pen				Amount of shelter available (shade / protection from wind / access to bedding)		None of the pen 0%		Whole pen 100%				
Mortality Number of animals dead				Comments:		Amount of feed and water accessible		None of the pen 0%	Whole pen 100%			
<b>Health</b>				Indicate on the scale (X) the percentage of animals exhibit the following signs:		<b>Panting score:</b> Circle most appropriate		0	<b>1</b> <input checked="" type="checkbox"/>	2	3	
none of them				all of them		Breathing:		Not visible <input checked="" type="checkbox"/> Visible flank movements <input type="checkbox"/> Visible, elevated <input type="checkbox"/>				
Coughing				0%	<b>X</b>	100%	Mouth:		Closed <input checked="" type="checkbox"/> Open sometimes <input type="checkbox"/> Open continuously, tongue out <input type="checkbox"/>			
Sneezing				0%	<b>X</b>	100%	Drooling:		Some <input checked="" type="checkbox"/> Heavy <input type="checkbox"/>			
Nasal discharge				0%	<b>X</b>	100%	Head/neck:		Neck extended <input type="checkbox"/> Head dropped <input checked="" type="checkbox"/>			
Unable to stand				0%	<b>X</b>	100%	<b>Faecal structure:</b> Circle most appropriate		1		2	3
Isolated and depressed				0%	<b>X</b>	100%	normal		loose and watery		1	
Bright, alert and responsive				0%		100%	<b>Body condition score</b>		1		<b>X</b>	5
Eating				0%		100%	Indicate average (A), minimum(M) and maximum(X) on the scale					
Drinking				0%		100%	<b>Behaviour</b> – indicate on the line how the animals appear to you:		Agitated		Calm	
Ruminating				0%		100%	Inactive		Lethargic		Responsive	
Resting				0%		100%	Alert		Relaxed			
Wounds/lesions				0%		100%	Lame		Gut empty		Vocalising	
Lame				0%		100%	Alert		Relaxed			
Gut empty				0%		100%	Alert		Relaxed			
Vocalising				0%		100%	Alert		Relaxed			

# QA dashboard

Benchmarking



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## QA dashboard



Data entry

Exporters

real time feedback, self audit



Data analysis

Livecorp

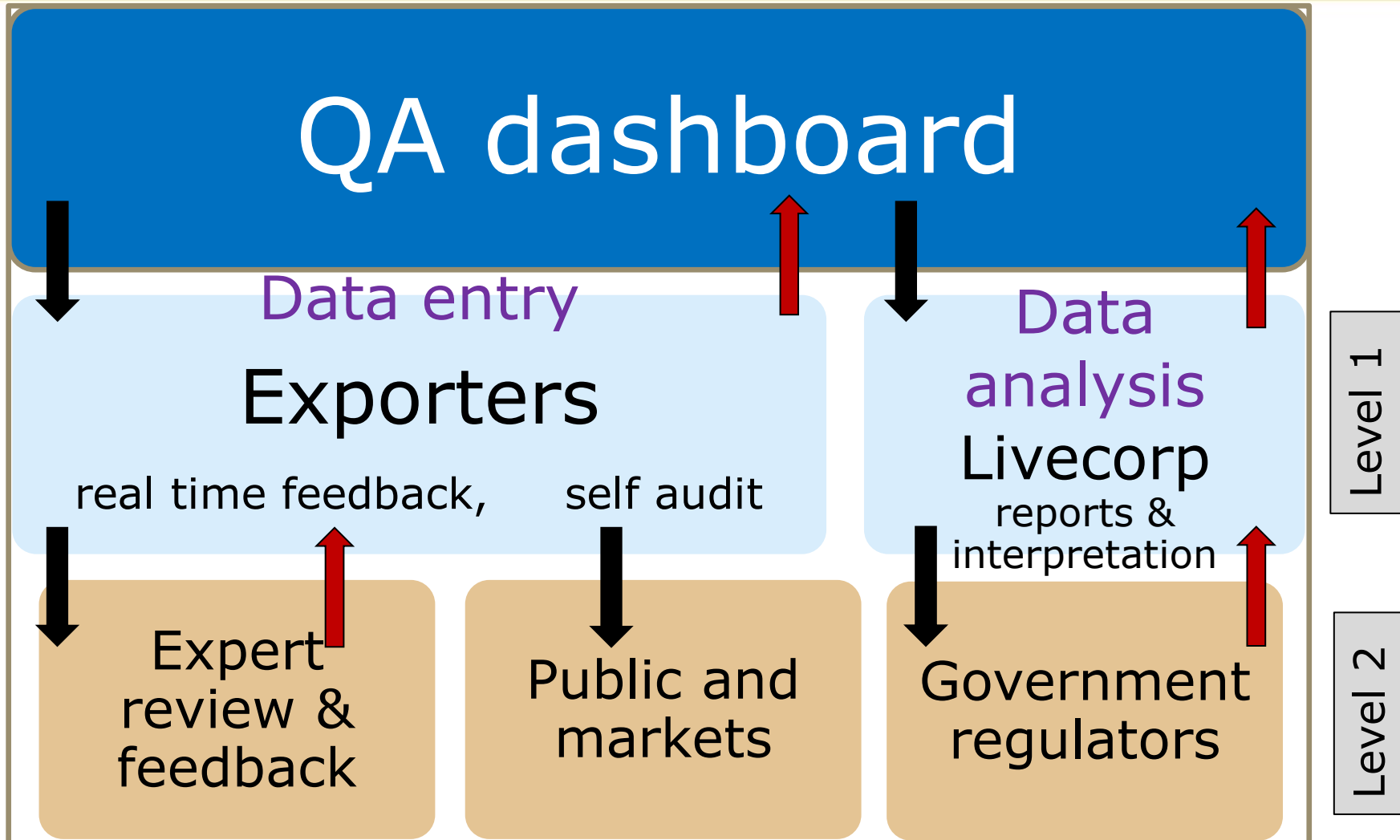
reports &  
interpretation



- ➔ **RED:** Action is needed
- ➔ **AMBER:** Plan for continuous improvement
- ➔ **GREEN:** Maintain high standards



# QA dashboard



# Welfare Indicators Summary

- Current regulations don't capture sufficient animal-based welfare measures
- Welfare indicators can align industry practices and community expectations
- Used through entire value chain via monitoring and risk assessment framework
- Welfare performance review can identify problems early, enable corrective actions
- Industry led continuous improvement, and increase transparency



# Welfare assessment reviews

*Animals* **2014**, 4, 446-462; doi:10.3390/ani4030446

Review

## A Prototype Tool to Enable Farmers to Measure and Improve the Welfare Performance of the Farm Animal Enterprise: The Unified Field Index

Ian G. Colditz<sup>1,\*</sup>, Drewe M. Ferguson<sup>1</sup>, Teresa Collins<sup>2</sup>, Lindsay Matthews<sup>3,4</sup> and Paul H. Hemsworth<sup>5</sup>

*Trends in Food Science & Technology* 37 (2014) 127–136



## Best practice framework for animal welfare certification schemes<sup>☆</sup>

D.C.J. Main<sup>a,\*</sup>, S. Mullan<sup>a</sup>,  
C. Atkinson<sup>b</sup>, M. Cooper<sup>c</sup>,  
J.H.M. Wrathall<sup>c</sup> and  
H.J. Blokhuis<sup>d</sup>

*Small Ruminant Research* 135 (2016) 20–25

Review article

## On-farm welfare monitoring of small ruminants<sup>☆</sup>

M. Caroprese<sup>a,\*</sup>, F. Napolitano<sup>b</sup>, S. Mattiello<sup>c</sup>, G.C. Fthenakis<sup>d</sup>, O. Ribó<sup>e</sup>, A. Sevi<sup>a</sup>

*The Veterinary Journal* 206 (2015) 289–297

## A systematic review of animal based indicators of sheep welfare on farm, at market and during transport, and qualitative appraisal of their validity and feasibility for use in UK abattoirs

P. Llonch<sup>a\*,1</sup>, E.M. King<sup>a</sup>, K.A. Clarke<sup>b</sup>, J.M. Downes<sup>b</sup>, L.E. Green<sup>a</sup>

Thank you

