

ICAR workshop, 2 June 2026, Verona

ANIMAL WELFARE RISK ASSESSMENT: DATA AND THE WAY FORWARD

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SCOPE



What EFSA does in animal welfare risk assessment ?

Examples of risk assessment in EFSA : Dairy Cows & Calves

Why data are essential in AW risk assessment?

The way forward ...



EFSA'S END-TO-END RISK ASSESSMENT WORKFLOW | HIGH-LEVEL STEPS



Mandate & dossier intake

- Mandate and dossier receipt
- Withdrawal of a mandate/dossier
- Chartering & mandate acceptance
- Validity check & validation of the dossier
- Confidentiality decision-making process
- Consultation of the public & targeted stakeholders



Preliminary activities to Risk Assessment

- Workforce mix definition
- Definition of outsourced tasks
- Protocol development & approval (generic mandates)
- Quality assurance standards
- Meeting organisation



Risk Assessment (RA)

- Preparation of the first draft scientific output or reporting table preparation
- Tollgates
- Sending request for additional info
- Finalisation of the scientific output
- Endorsement / adoption / approval of a scientific output
- Approval of supporting publications & supporting evidence



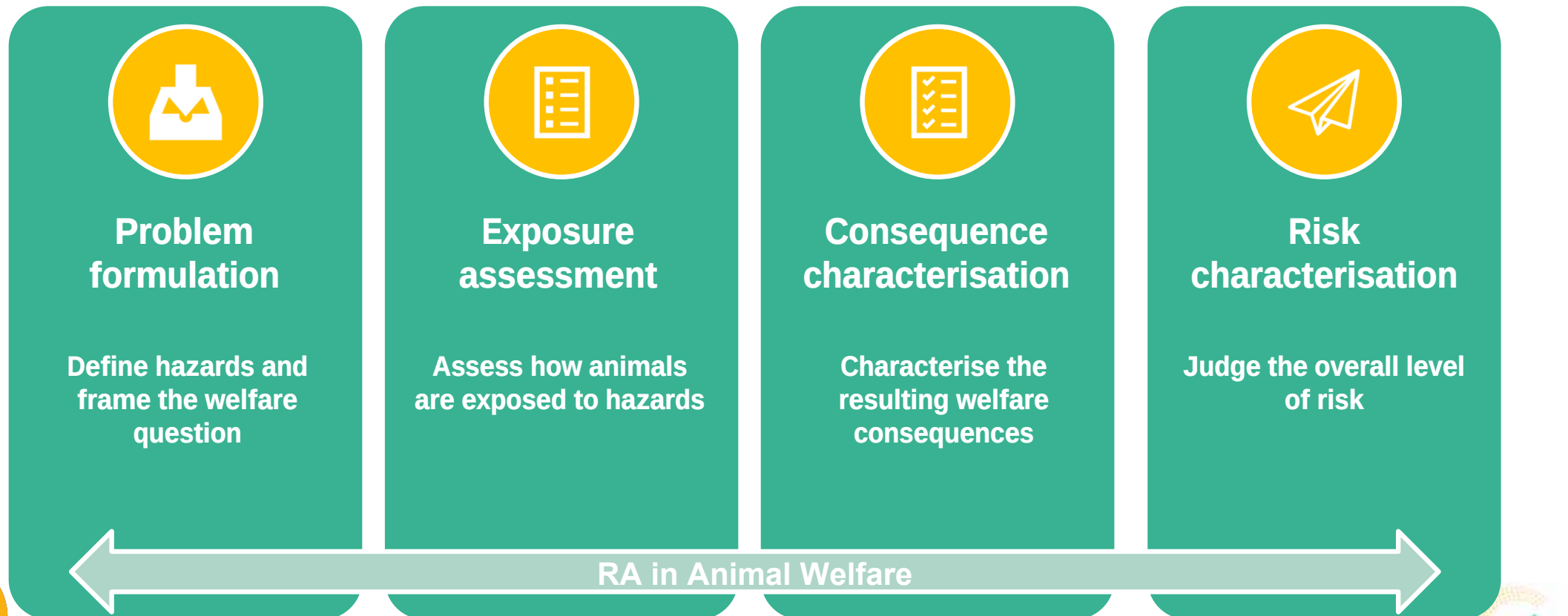
Output publication & dissemination

- Post-adoption of scientific output
- Editorial checks and corrections
- Pre-notifications and publication of scientific output
- Publication of scientific outputs, supporting publications and supporting evidence
- Correction of a published scientific output

CONFIDENTIALITY



EFSA'S END-TO-END RISK ASSESSMENT WORKFLOW | HIGH-LEVEL STEPS





TOOLS FOR THE JOB

DATA

**A.I.
SUPPORTING
SCIENCE**

METHODS

PEOPLE





DAIRY COWS

Efsa journal 2023; 21(5):7993:

<https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2023.7993>

DAIRY COWS EXAMPLE:

efsa journal 2023; 21(5):7993: <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2023.7993>

Assessment 1. The description of housing systems and their strengths, weaknesses as well as specific hazards for the welfare of dairy cows

Assessment 2. The assessment of selected welfare consequences in terms of ABMs and their prevalence in different housing systems



EFSA to propose

**Detailed, qualitative and quantitative ABMs
and preventive and corrective measures**

Assessment 3. The analysis of farm characteristics suitable to identify farms at risk of poor dairy cow welfare



ASSESSMENT : WELFARE CONSEQUENCE -> LAMENESS (1)

Locomotory disorders: conclusions

Description

Lameness is a significant welfare issue in dairy cows associated with pain and reduced ability to perform natural behaviours

ABMs

- Gait scoring
- Foot lesion scoring

System Comparison

- Multifactorial (environment, management, animal)
- No clear evidence that one housing system is consistently better

Cubicles



High risk of claw disorders and lameness in cubicles with shallow beds or mats

vs

Access to **pasture** (temporary)



Lower prevalence of integument damage compared to zero-grazing systems



ASSESSMENT : WELFARE CONSEQUENCE -> LAMENESS (2)

Locomotory disorders: recommendations



Preventing lameness includes **regular gait scoring** followed by early treatment of lame cows.



Dimensions and design of the lying area(s) and cubicle furniture should match the size of cows ensuring that comfort is optimised, freedom of lying behaviour (natural postural changes) is allowed and risk of injury is minimised.



Dairy cows should be provided with **dry, soft and deformable lying surfaces**.



The walking and standing surface should be **clean, dry, non-slip and avoiding sharp edges**.



Tracks for pasture access should be suitable for long-distance walking (e.g. even surfaced, free from stones and debris).

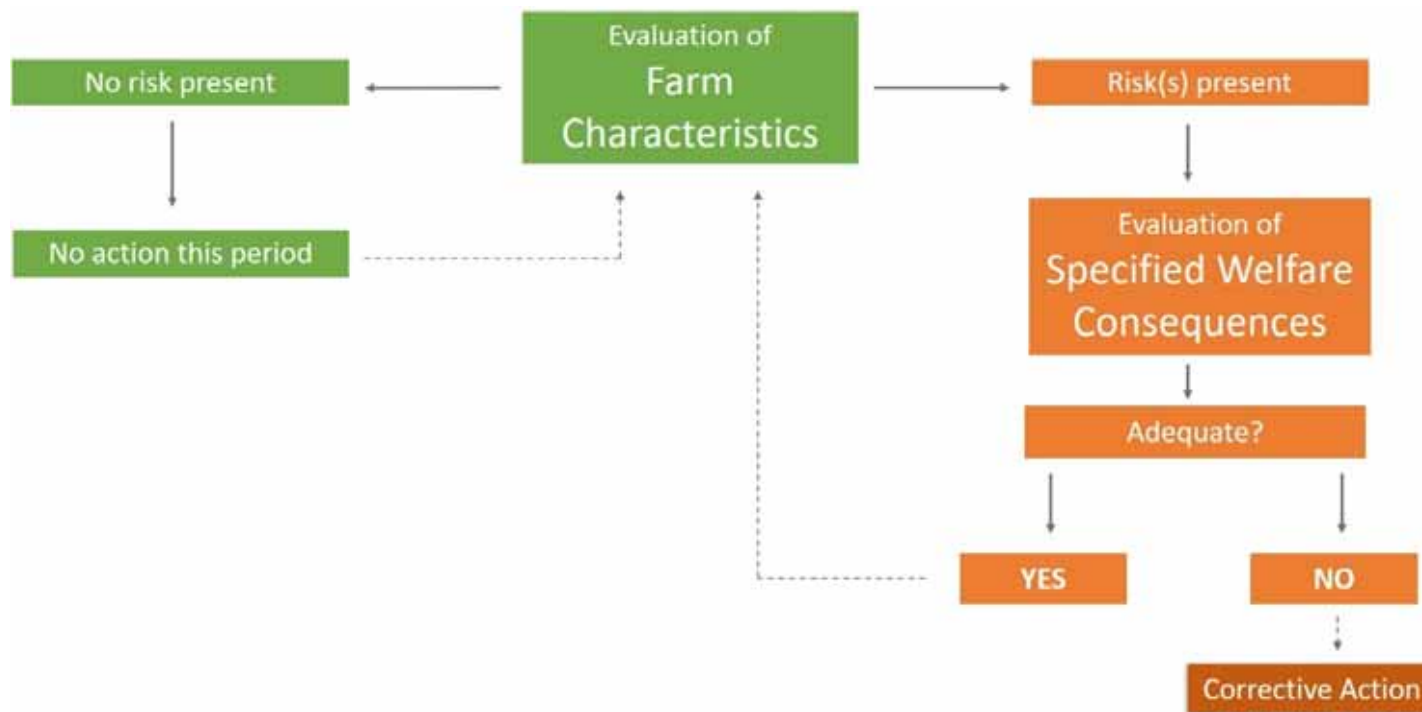


ASSESSMENT: FARM CHARACTERISTICS IN DAIRY COWS

Aim: Identification of farm characteristics that could be used to categorise farms at risk of poor welfare

Method: expert knowledge elicitation (EKE) to **identify these farm characteristics**

Framework for a risk-based assessment of dairy cow welfare for EU farms:



ASSESSMENT: FARM CHARACTERISTICS

Results: Five farm characteristics identified that characterise farms at risk of poor welfare (in order of importance attributed by the experts)

1. Farms with more than one cow per cubicle at maximum stocking rate
2. Farms with a limited total space (including outdoor loafing areas) for housed cows (<7 m²/cow)
3. Farms on which cubicle dimensions are inappropriate for the size of the cows
4. Farms with high annual on-farm mortality (i.e. more than 8% including emergency slaughter) rates
5. Farms on which cows have less than 2 months per year access to pasture

Recommendations: If one or more of these farm characteristics are present, it is recommended to conduct an assessment of cow welfare on the farm in question





CALVES

EFSA Journal 2023;21(3):7896:

<https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2023.7896>



CALVES EXAMPLE:

EFSA Journal 2023;21(3):7896: <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2023.7896>

Specific scenario 1. The welfare of male dairy calves raised for producing “white” veal meat and the risks associated with individual housing, insufficient space, and feed restriction (such as deprivation of iron and fibres)

Specific scenario 3. The welfare of dairy calves and the risks associated with limited cow-calf bond.



EFSA to propose

**Detailed, qualitative and quantitative ABMs
and preventive and corrective measures**

Specific scenario 2. The assessment of ABMs collected in slaughterhouses to monitor the level of on farm welfare of male dairy calves raised for producing “white” veal meat



RESULTS ASSESSMENT CALVES

Avoid individual housing

Keep animals in small groups of 2-7 animals of similar age for social behaviour.



Space allowance

Calves need to have enough space to be able to rest in a relaxed position - at least 3m² per animal.

To be able to perform full play behaviour they need 20 m².



Comfortable bedding

For their comfort provide a deformable bedding.



Cow-calf contact

Cow and calf need to be together for at least 1 day after birth.



A SHORTLIST OF ANIMAL-BASED MEASURES IN CALVES



Animal-based measures	Which welfare consequence does it reflect?	Resulting from...
Vocalisations; Non-nutritive sucking (sucking of equipment)	Prolonged hunger	Low amount of milk; low frequency of milk feeding
Response in standard social approach test (from calf); Fear response	Isolation stress	Individual housing and lack of socialisation
Cross-sucking; Non-nutritive sucking (sucking of equipment)	inability to perform sucking behaviour	Low milk allowance; offering milk in buckets; lack of sufficient forage in the diet; barren environments
Lack of play behaviour	Inability to perform play behaviour	Small spaces; individual housing; barren environment



SPECIFIC SCENARIO – WELFARE INDICATORS COLLECTED IN ABATTOIRS

Common welfare issues in veal:

Anaemia

General health disorders (gastro-enteric
and respiratory problems)

Resting problems

There are **no abattoir ABMs** to detect
behavioural welfare consequences



SUGGESTED ABMS

1. Body condition score
2. Carcass condemnations
3. Carcass colour
4. Abomasal lesions
5. Lung lesions
6. Bursa swelling



SPECIFIC SCENARIO – WELFARE INDICATORS COLLECTED IN ABATTOIRS

RECOMMENDATIONS

- Collection of data on **body condition score**, **carcass condemnations**, **carcass colour**, **abomasal lesions**, **lung lesions**, and **bursa swelling**
- To be complemented with behaviour data collected on farm
- Data **already collected** for commercial purposes such as **carcass colour** should be made available
- **Harmonised systems and systems for automatic and continuous assessment** should be developed



DATA GAPS IN RISK ASSESSMENT



Lack of harmonised Welfare Data

Diverse protocols and inconsistent data hinder aggregation and comparison of animal welfare assessments

Different protocols, Different definitions, Different scales, Different sampling frames, Different data ownership models.



Gaps in Welfare outcome prevalence & distribution

Missing comprehensive EU-level data on animal welfare outcomes limits the accuracy of risk assessments and exposure characterization.

Need EU-level data on ABMs and welfare consequences.

Need for data across systems, regions, herd sizes, seasons and management types



Challenges in Data Interpretation (severity, duration)

Lack of validated thresholds of ABMs and (automated) tools complicates interpreting (sensor) data, risking data-rich but interpretation-poor monitoring.

Need for good validation studies & designs



DATA ESSENTIALS IN ANIMAL WELFARE



Causal links

Need for stronger links (proof) between hazards, exposure, ABMs & Welfare consequences



Important for benchmarking and prioritizing interventions



WHY IS WELFARE RA DATA HUNGRY?



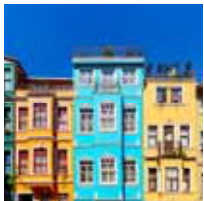
Animal Welfare is multidimensional

But so is Animal Health, One Health



Welfare consequences interact with each other

Unfortunately, not one Welfare consequence at the time ;



Data vary by farm, region, production system and measuring method



Need for estimating prevalence, quantify exposure (duration and severity of WC, compare systems)



FOR ABMS : WHAT ABOUT THRESHOLDS & INTERPRETATION

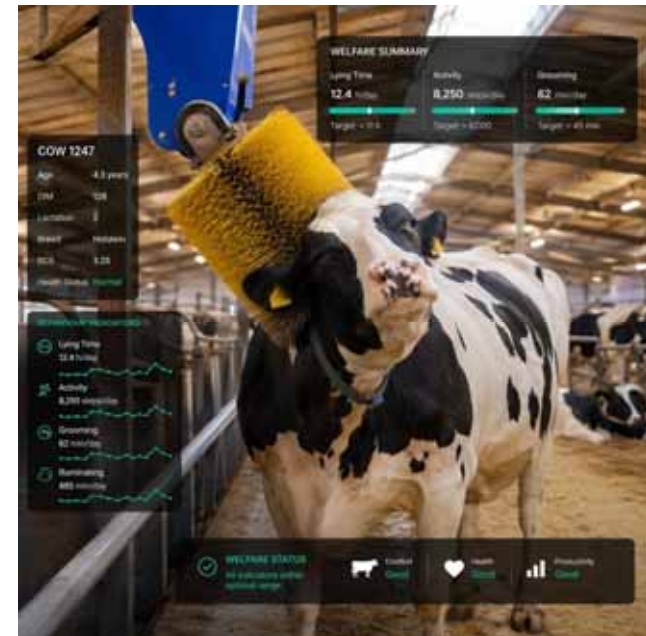
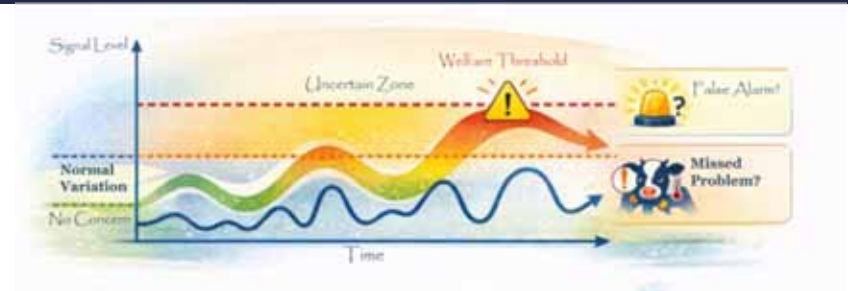
- ***The tricky (scientific) question?***

When does a (sensor) signal becomes a welfare issue?

- ***Aiming for:*** ABMs are measured and need validated thresholds linked to Welfare consequences that are at stake?

- ***Pitfall:***

“Data rich but interpretation-poor” monitoring





THE WAY FORWARD?

**EFSA's efforts in collecting field data for
validation of Risk assessments**





**EFSA grant:
GP/EFSA/BIOHAW/2023/03**

**Risk-based model for Dairy Herd
Welfare: Field data collection**

**On-farm data collection to
'validate' risk-based model
developed by EFSA**



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DI MILANO

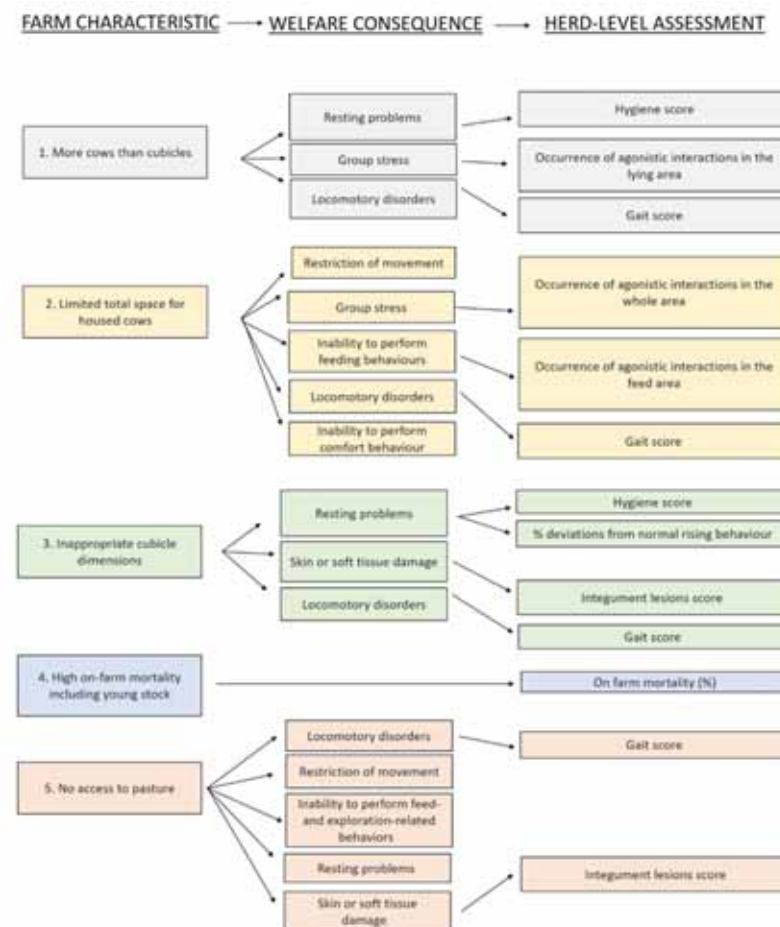


EFSA GRANT: GP/EFSA/BIOHAW/2023/03

Complete assessment for the 5 characteristics can be found in the Scientific Opinion.

Recommendation from Scientific opinion

It is recommended that the risk-based scheme developed from the EKE is piloted to validate its usefulness in practice prior to implementation.



EU PARTNERSHIP AH&W : KNOWLEDGE PLATFORM ON AW



Create a **digital platform** to facilitate the **monitoring and surveillance** of animal welfare

Create a **network** of relevant **animal welfare stakeholders**

Collect currently used **animal welfare measures/indicators, assessment methods, tools and data**

Design/describe a **digital platform**

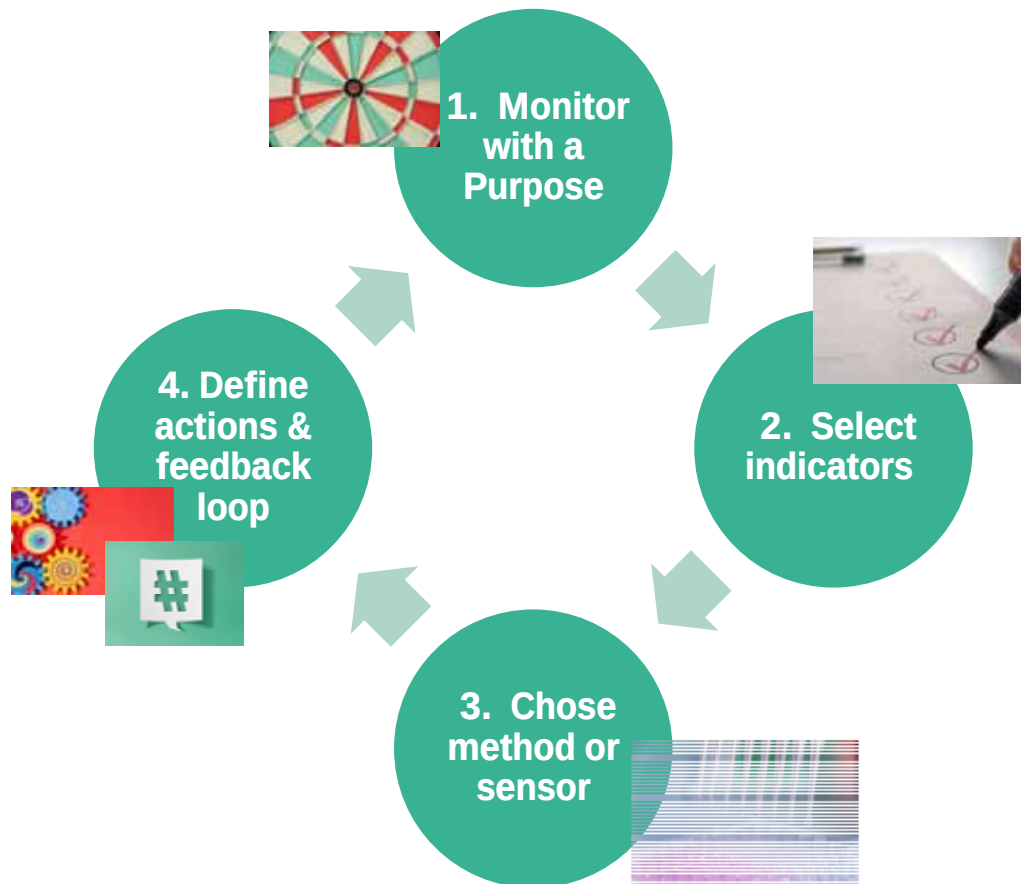


turkeys
pigs
beef cattle
goat
INSECTS
rabbit
sheep
salmon
sea bream
broiler chicken
dairy cattle
trout
sea bass
laying hen



THE WAY FORWARD → MONITORING IS THE STARTING POINT

The Way forward



Welfare data that drives better decisions

Collect relevant data, interpret with context, and act to improve animal welfare.



RISK ASSESSMENT

Identify potential welfare risks early.

Lameness Risk

Herd A	High
Herd B	Medium
Herd C	Low



SURVEILLANCE

Monitor trends to detect changes over time.

Lie Time (h/day)



BENCHMARKING

Compare performance and learn from others.

Mastitis Incidence (%)

Your Herd	8.1%
Peer Avg	12.3%
Top 25%	5.4%



WELFARE IMPROVEMENT

Target actions that improve welfare and outcomes.

Action Impact



Collect



Analyze



Act



Improve



Measurement is valuable when it helps answer a welfare question and supports better decisions.

THE WAY FORWARD → NEED FOR COMMON ANIMAL WELFARE APPROACH

ENHANCE COMMUNICATION among researchers, vets, AW advocates, and policy makers

VISION

HARMONISE AW assessment for consistent and reliable comparison

ESTABLISH a foundation for **strong, science-based AW regulations and guidelines**



CONCLUSION & NEW QUESTIONS?

**“The future is not only more data...
The future is using the right data to make
better decisions for better animal welfare”**



Priority welfare focus

Which welfare outcomes matter most?



Benchmarking standards

What minimum data quality is needed?



Trusted data sharing

How can farmers gain value while trust is protected?



THANK YOU



THANK YOU & STAY CONNECTED!

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