Costs and benefits of animal identification and recording for animal health

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FAO/ICAR Symposium Pretoria 14-17 April

Overview

- Introduction
  - Why economic evaluation of animal health interventions; and
  - Short summary of history of animal health economics and current knowledge, with some examples of economics of disease control/eradication measures.
- Cost
  - Methods, cost structure, distribution;
- Benefits
  - Direct and indirect, methods; and
- Some tentative examples on C/B for AIR for animal health (theft);
- Drivers of adoption; and
- Influencing decision makers.

ECONOMICS OF DISEASE CONTROL/ERADICATION

Why economic evaluation of animal health investments

- Provide options to decision makers regarding:
  - Priority disease identification;
  - Disease management strategies:
    - Eradication vs control, regionalization, to AIR or not to AIR;
    - B/C of avoiding disease and the cost of doing nothing.
- But not only the highest return on investment is determining factor:
  - Equity and other distribution effects;
    - Value chain actors, poor vs. better-off producers and consumers.

History of economic evaluation of animal health interventions

- Seventies and eighties:
  - Focus on cost-benefits combined with herd dynamic models estimating direct benefits (VEERU/Massey);
- Eighties and nineties:
  - Greater variety of tools: decision trees, linear programming, disease simulations, willingness to pay (Davis);
  - Intensive production systems, risk analysis (Wageningen)
- More recent:
  - Decision making processes on control options (Brisbane); and
  - Tick borne diseases and food safety (ILRI).
- **Now full set of tools available, also for ex-ante. Issue is data availability**

  - Source Rusthon et al (2005)

Some examples of Benefit/Cost estimates

	Country/region	Benefit/Cost ratio (IRR)	Key driving factors	Source
Rinderpest	Africa	1.1-3.9 (11%-118%)	Livestock density	Tambi et al (1999)
Tsetse	Nigeria	2.6-5.0	Extra carrying capacity	Putt and Shaw (1982)
FMD	Philippines	1.6-12	Time to eradicate and export	Randolph et al (2002)
ECF (ITM)	Kenya	9-17	Costs of stabilate and delivery	IFAD and others

Conclusions on B/C

- Highly variable outcomes depending on:
  - Delivery costs/livestock density and structure of the sector;
  - Estimation of the benefits;
    - Direct, indirect, assumptions on market behavior, time to achieve control/eradication;
  - Possible economies of scale.
- But generally a favorable return on investments.
- **Why is this not better known??**

Economics of AIR in disease control/eradication

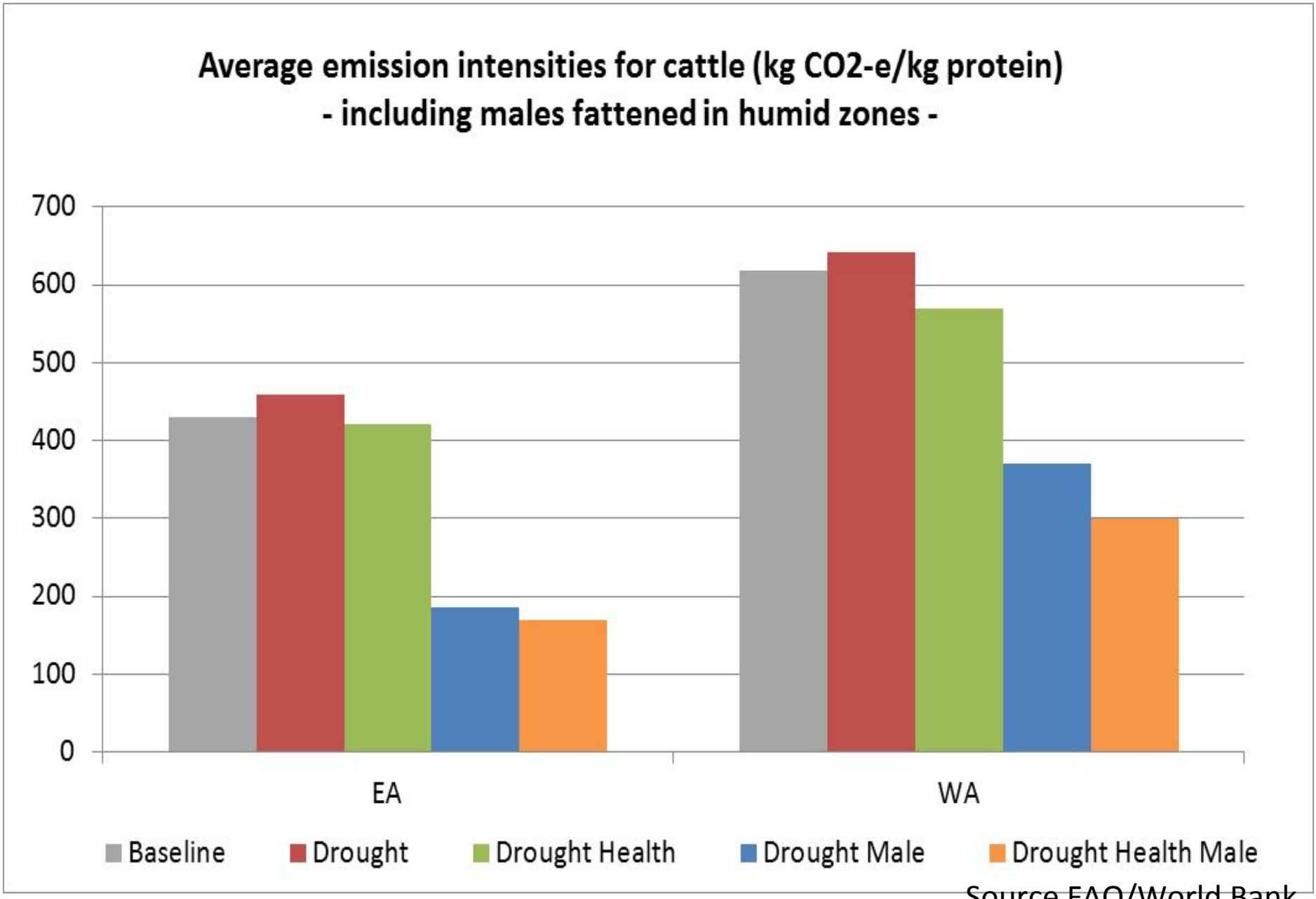
Unchartered territory

Factors defining costs

- Purpose:
  - Why AIR and what are the risks is essential to define the scope of traceability
    - All species vs single species
    - Single eartag vs dual RFID tags
    - Basic unit (animal, herd, community, region, country)
- Phasing
  - Starting small;
- Physical infrastructure adjustments needed; and
- Economies of scale.

Benefits from AIR for Health Improvement

- Direct:
  - Reduction in control costs and mortality and morbidity from trans-boundary disease incidence;
  - Higher prices because of access to more remunerative markets;
    - But export no panacea
  - Safer food because of traceability.
- Indirect:
  - Employment generation in value chain
  - Reduced Greenhouse Gas Emission
- Methodology: sub-samples



Source FAO/World Bank

Some very tentative projections

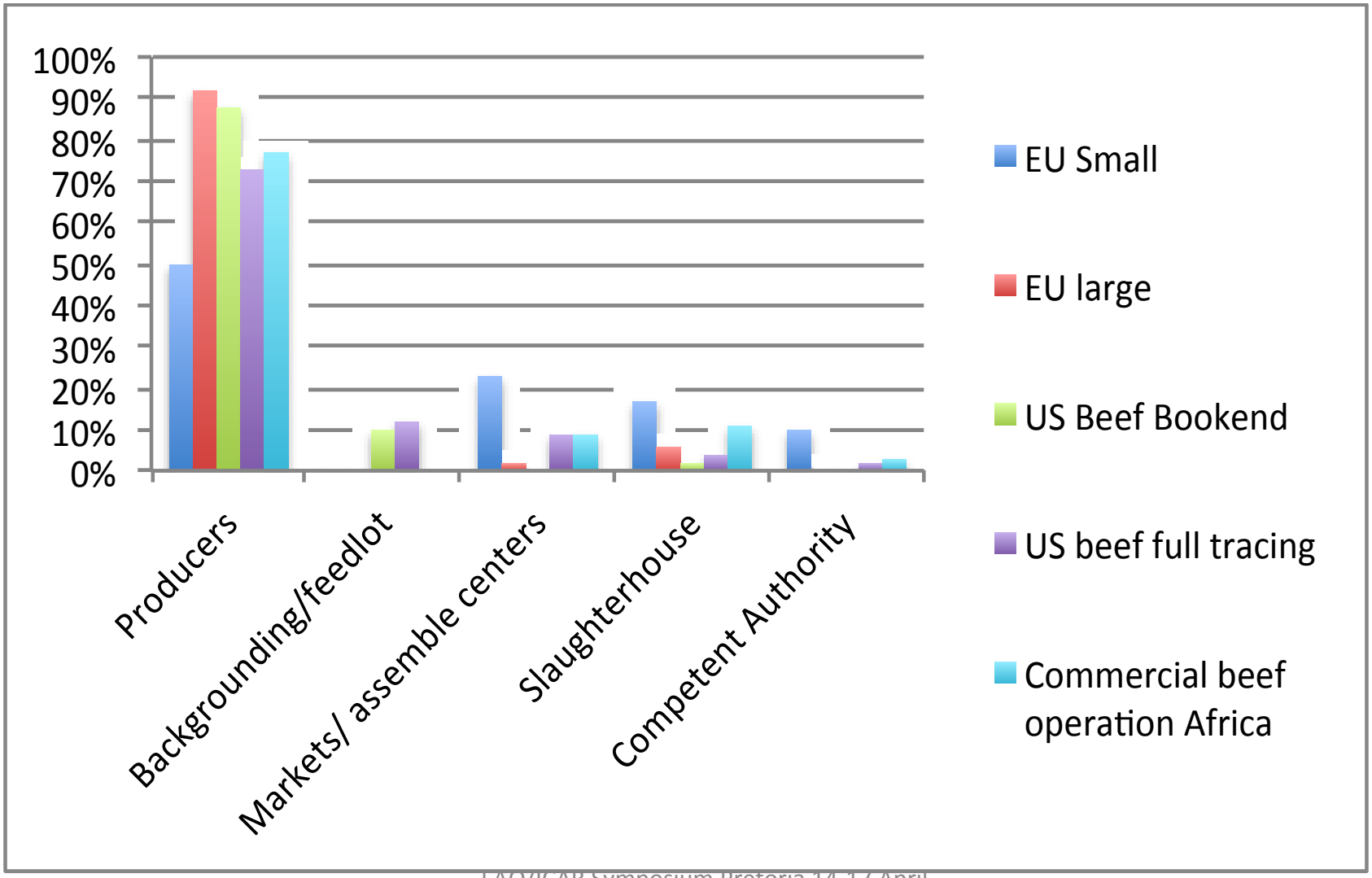
- Use on ECO-RUM model to estimate benefits and IRR at farm level
- Assumptions:
  - Traditional (pastoral herd)
  - Cost varying from US$ 1-US$ 4/head
  - All animals identified;
  - Simulations with different increases in off-take and one simulation with theft prevention;
- **Question: Is it attractive to the producer**

Impact of cost of AIR/head on IRR for health improvement and theft prevention at farm level (100 animal traditional pastoral herd)

Cost of Identification/head	Assumed increase in offtake	5 year projections	20 year projections	With theft prevention (0.5 animal/year)
$1	1%	-12%	21%	N/A
$4	2%	-53%	-2%	41%
$4	3%	-29%	12%	57%
$4	4%	-13%	21%	74%

Three comments: (a) importance of time frame; (b) significant increase in offtake needed; and (c) high returns of theft prevention

Distribution of costs along the chain



Adoption drivers

	Positive			Negative		
Livestock systems	Reduced incidence trans-boundary diseases	Increased price	Enhanced food safety	Fear of AIR used for other public purposes	Other social constraints	Labor/ shrinkage
Small Nomadic	+	-	-	++	++	-
Large nomadic	++	++	+	+	+	+
Export oriented beef cattle	+++	++	+	-	-	++

Addressing the drivers

- Define the nature of AIR services provided

Public good	Private good
Consumption doesn't reduce availability others	Owner can exclusively exercise property right and capture benefits
Nobody can be excluded	
"Free riders"	
Control trans-boundary diseases Tracking for theft	Clinical services, Performance recording

- Control trans-boundary diseases generally considered (international) public good

Addressing the drivers (2)

- The equity issue:
  - Producer pays most, and in particular smallholder benefits less;
  - Need for cross-sectoral and cross wealth group transfers and subsidies.

- The social constraints:
  - Need for fully inclusive interaction with all stakeholders

Convincing sources of funding

- Governments
  - Cost/benefits levels compared to other investments;
  - Food safety, in particular in times of crisis
  - But fickle
- Donors
  - Reduction of international externalities
    - GHG, disease outbreaks in OECD countries, trade
  - Poverty reduction;
  - Sustainability; and
  - But time-bound.
- Commercial partners
  - Consumer power!!!
  - But charging back to producers?

Conclusions

- Cost are high, and benefit long term therefore:
  - Purpose should be well defined;
  - Integrated approach, but phased;
  - Ex ante Cost/benefit projections should be realistic, with major attention to what is in over the medium term for the producer.
- Permanent support is needed:
  - Need to convince public institutions on public good element;
- Need to come to equitable distribution of costs, related to benefits.

THANK YOU AND GOOD LUCK