Milk quality assurance systems in smallholder-dominated dairy chains: Lessons from Kenya

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3R Rescue Reduce Restore From Aid to Trade

Snapshot of the Kenya Dairy Sector

- Accounts for 14% of Kenya's agricultural GDP, 4% total GDP
- Annual milk production estimated at 5.2 billion litres, with cow milk accounting for 75%
- Most milk produced by about 1.8 million smallholder farmers
- Highest per capita consumption of milk in region at about 110 liters and projected to double by 2030
- Most milk (circa 70%) sold informally and 30% to formal markets
- ***Projections indicate a milk deficit of 675 million litres in 2017 and 1.2 billion litres by 2022 due to poor in milk yields***

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Milk quality and safety in Kenya

Assuring the quality and safety of milk and dairy products a persistent problem

Major reasons are:, processors and traders competition for milk volumes neglecting quality; poor milk handling practices along the chain, gaps in enforcement of quality & safety regulations; limited consumer awareness on quality & safety

It is additionally challenging to assure high quality from milk collected from smallholder farmers due to limited volumes and high transaction costs

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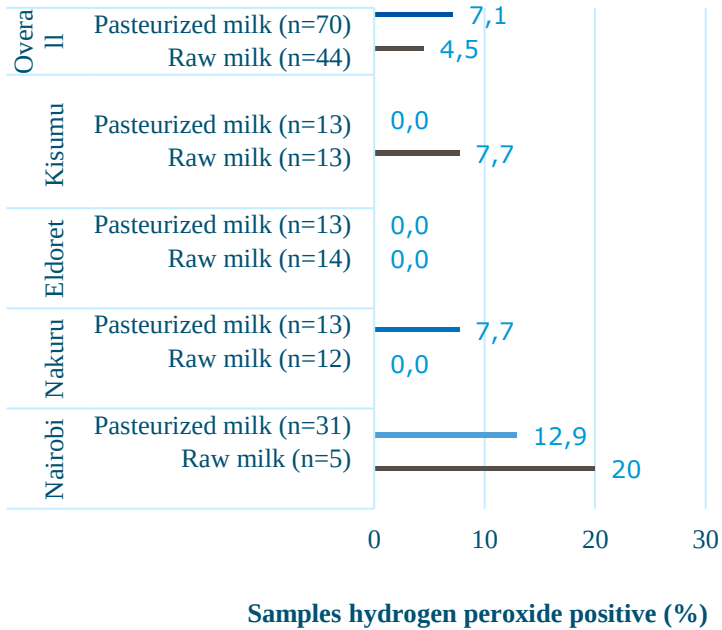
How big is the milk quality problem in Kenya?

Substantive research has been conducted to assess milk quality in Kenya
Some results from Bebe et al (2019)

Quality indicator	Product	Town	Sample (n)	Mean	SD	Samples noncompliant (%)
Total viable counts (log10cfu/ml)						
	Raw milk					
		Nairobi	5	6.62	0.53	100.0
		Nakuru	12	5.19	2.14	50.0
		Eldoret	14	6.30	0.77	50.0
		Kisumu	13	3.59	3.01	38.5
		Total	44	5.23	2.31	52.3
	Pasteurized milk					
		Nairobi	31	0.80	0.96	0.0
		Nakuru	13	1.71	2.35	0.0
		Eldoret	13	0.87	1.46	0.0
		Kisumu	13	3.87	2.82	53.8
		Total	70	1.56	2.12	10.0



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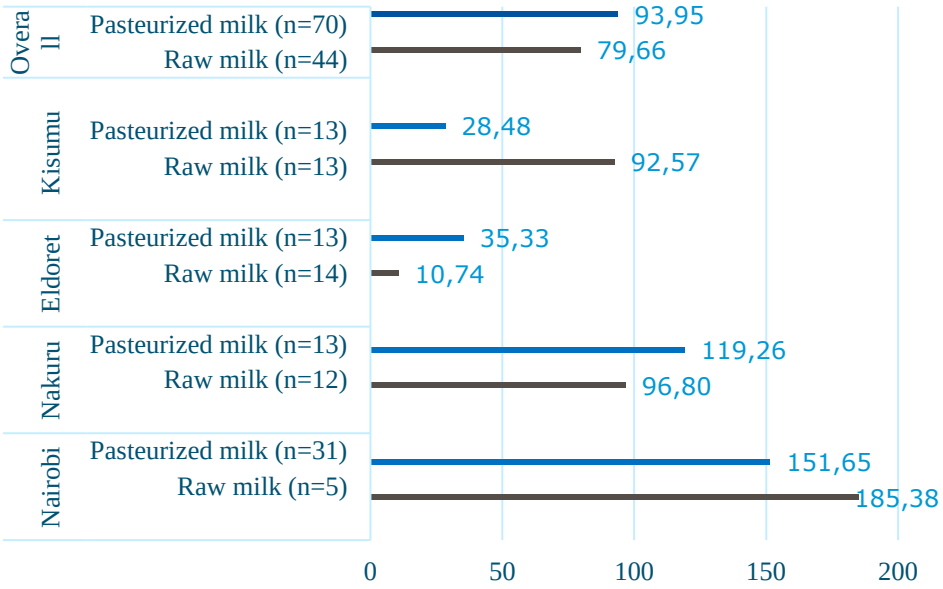
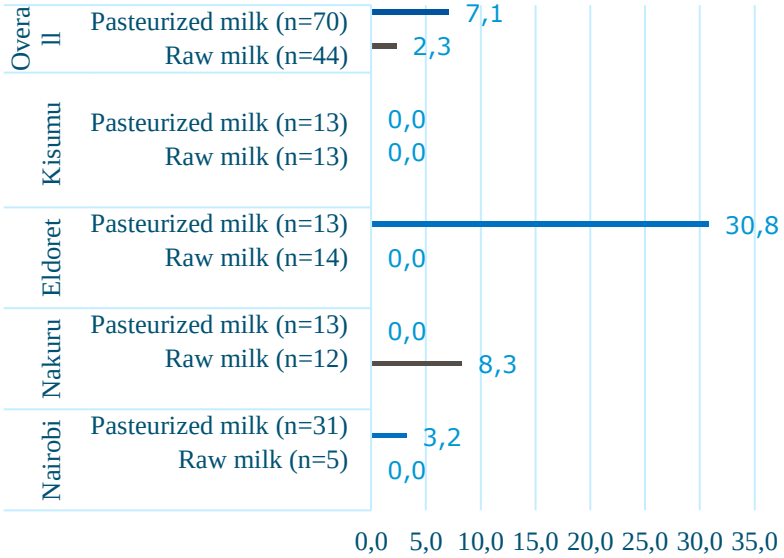


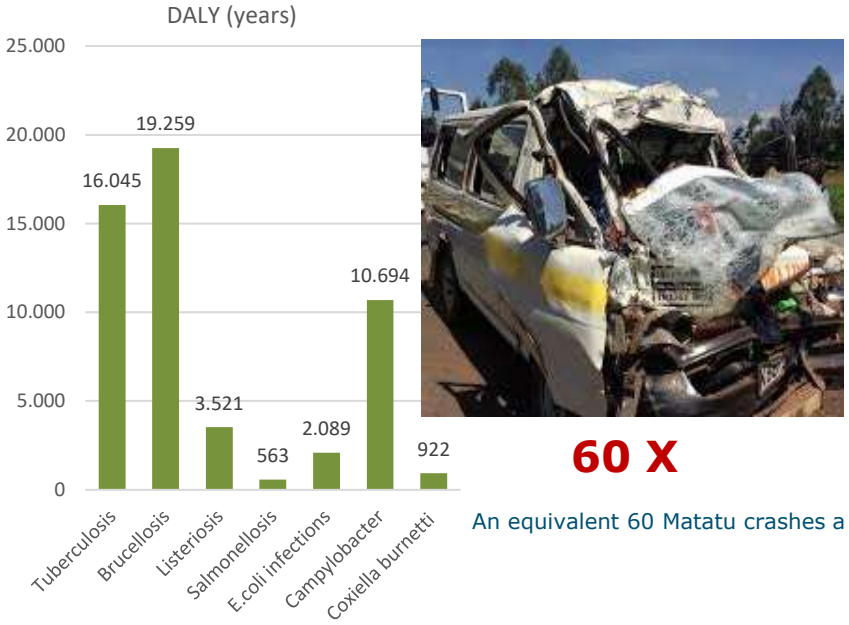
AFM1 concentration (ppt)
Using codex/EAC standards- 500ppt



Samples antibiotic positive (%)

Public health costs for poor quality milk in Kenya

Disability Adjusted Life Years (DALYs) of milk related infectious diseases in Kenya

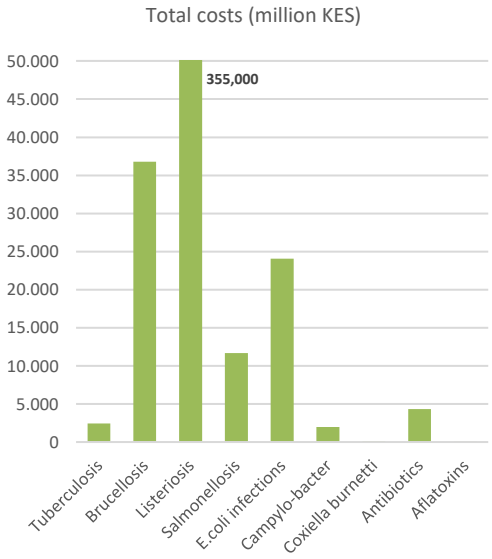


60 X

An equivalent 60 Matatu crashes a year

Total DALYs = **53,093** years which is an equivalent **850** full lives lost in Kenya per year in Kenya due to milk related illnesses

Total annual (direct and indirect) costs of milk related health hazards in Kenya (1,000,000 KES)



The health sector would save **284** billion KES per year for the whole dairy sector by reducing 50% incidence

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QBMPS possible solution to milk quality in Kenya?

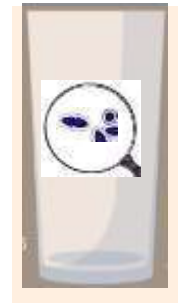
QMBPS increasingly advocated for in Kenya

- Focus milk payment based not only on quantity but also on quality (incentive?).

Pilot QBMPS- re-organise & improve milk collection, handling, testing- Milk Quality Tracking & Tracing

- Quality parameters that may be considered:
  - Physical (density, freezing point),
  - Chemical (total solids, antibiotic residues and adulteration), and
  - Microbial (total plate counts) traits

QBMPS not about a new pricing setting, but modifies existing price structure to improve the quality and safety of milk



Reject or Price

- Poor milk quality
- **Lower milk price or rejection**

Price

- Good milk quality
- **Higher milk price or bonus**

QBMPS can be adjusted depending on the needs and products of the processors, coops, government etc.

What is required for a QBMPS to work? Lessons

Demand for quality milk

- Processors (also willing to drive the system)
- Consumers?

Skilled managers, lab techs, coop workers, farmers

Trainings/ capacity building

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Reject or Price ↓

➢Poor milk quality
➢**Lower milk price or rejection**

Price ↑

➢Good milk quality
➢**Higher milk price or bonus**

Labs & equipment, water, electricity

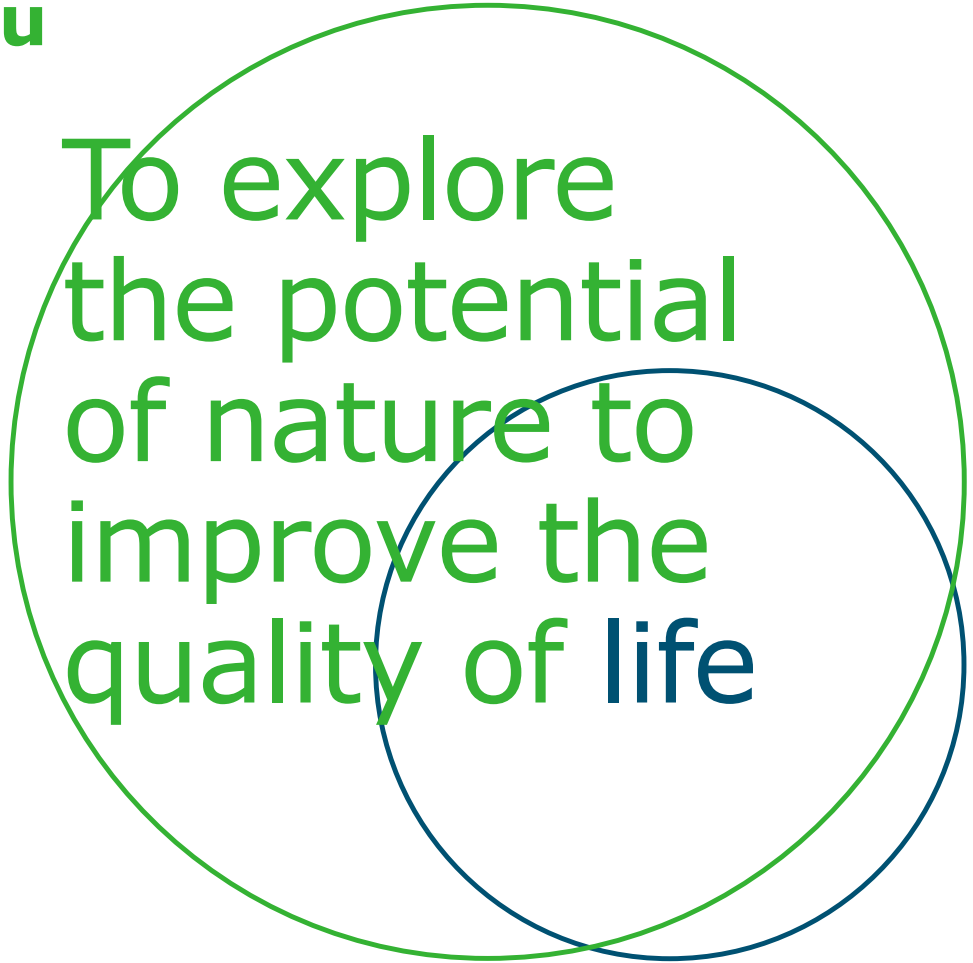
M&E system to track progress and improve quality

Arbitrator

Where are we now? More reflections

- Start with a nimble system with few and/or less stringent quality parameters and progressively build on them
- Support to smallholder organization and other chain actors on strict management needed for quality
- QBMPS pilot - evidence and advocacy has influenced shifts in the sector with more attention on quality and safety
- Processor-driven? Competition, sector growth, new product markets driving shifts
- Available and affordable testing equipment improving– New reference laboratory of the KDB – improving capacity to enforce standards , guide a safety-driven growth agenda

Thank you



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