Cost and benefits of animal identification and traceability along agrifood supply chain

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Animal identification and AIR systems for traceability and livestock development in SSA.
14-16 April. 2015. Pretoria, South Africa.
African meat market: smaller than most meat markets in other world regions

**African population and meat consumption as proportion of world’s total**

<table>
<thead>
<tr>
<th></th>
<th>% of world population</th>
<th>% of meat market</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/07</td>
<td>15.5 %</td>
<td>4.3 %</td>
</tr>
<tr>
<td>2050</td>
<td>26.8 %</td>
<td>8.4 %</td>
</tr>
</tbody>
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Source: Ugo Pica-Ciamarra (FAO) *et al*, 2013
Meat Markets: Africa and ROW

- Absolute increase in consumption, (mil. ton)

<table>
<thead>
<tr>
<th>Region</th>
<th>2005-07 to 2030</th>
<th>2030 to 2050</th>
<th>Annual growth rate 2005/07 to 2050</th>
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<tbody>
<tr>
<td>Dev.ed</td>
<td>16.8</td>
<td>6.6</td>
<td>0.4 %</td>
</tr>
<tr>
<td>Africa</td>
<td>10.3</td>
<td>14.0</td>
<td>2.8 %</td>
</tr>
<tr>
<td>Near East</td>
<td>7.0</td>
<td>6.1</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Latin America</td>
<td>17.1</td>
<td>9.7</td>
<td>4.1 %</td>
</tr>
<tr>
<td>S Asia</td>
<td>12.8</td>
<td>20.9</td>
<td>1.3 %</td>
</tr>
<tr>
<td>ES Asia</td>
<td>50.8</td>
<td>22.9</td>
<td>1.4 %</td>
</tr>
</tbody>
</table>

Source: Ugo Pica-Ciamarra (FAO) et al, 2013
Opportunity

- Absolute increase in consumption, (mil. ton)
- Increasing meat products prices
- Increasing demand: regionally & internationally
- Economic development and business opportunity: volume & value
- Beef and milk: largest share in value
- African producers partly not fully benefiting from growing market opportunities

Source: Ugo Pica-Ciamarra (FAO) et al, 2013
Benefits of AI and traceability systems are many

Direct benefits
- Market access and trade
- Animal health and disease management: prevention and response to disease outbreak
- Food safety – contamination and drug residue in meat products
- Enhanced transparency and information - whole chain

Indirect benefits
- Animal theft deterrent
- Lowered transaction costs – verification of purchased animals
Enhanced market access and trade

Accredited Standards and schemes
- HACCP, HALAL, ISO 9001:2000, ISO:14001
- EUREP-GAP
- Animal welfare

Direct benefits
- Meeting standards (accredited): requirement for market entry
- Opportunity for branding and product differentiation: selling attributes
- Signaling – market diversification
- Access to premium price

But

- Standards evolve and sometimes used as non-trade barriers
- Distribution of benefits along the chain: e.g. price premium
- Additional requirements, but additional value (?)
- Who access high-end oriented market?
Cost of animal disease outbreak can be significant

- Direct: death of animal and people, income losses
- Highly pathogenic avian influenza: Nigeria (2006/2007) 1.5 million birds lost (747,000 culled) and $145 mil. economic losses
- Foot and mouth disease: Botswana - trade ban led to $33 million (USD) losses at processing level alone
- Degree of losses: depends on the response, ability to trace and track, and risk management

AIS and traceability direct benefits
- Increased capability to respond to disease outbreak – identify source & take measures
- Enhanced control of livestock epidemics – control of high risk animal movement – prevent disease spread
- Reduced negative economic impact of animal disease outbreak - avoided losses
- Efficiency in management of vaccination efforts (e.g. FMD and CBPP)

AIS and traceability indirect benefits
- Animal theft deterrent
- Lower transaction costs
Zoonosis and food safety management

- Direct: death of people
- Indirect: Lowered productivity through illness
- Drug residues contamination
- Degree of losses (avoided and incurred): depends on the response, ability to trace and track, and risk management

ASI and traceability direct benefits

- Allows improved access to chain info.: zoonosis and food-borne disease management
- Enhance ability to track-back: identification of source of contamination
- Societal benefit: improved food safety throughout the chain

But

- Are we shipping out the good ‘apples’?
- What about local consumption and informal markets?
Costs of animal identification and traceability

Costs along the chain

- Registration and registration renewal costs
- Individual identification - costs of devices (e.g. tags, tagging including labour)
- Information system and data: management and maintenance costs
- Human resources and training
- Funding? role of government? private sector role?
Costs of animal identification and traceability

Example: Namibia

- **Estimated investment costs: €613,000**
  - Individual ID devices: 204,000
  - Computerized information system: 181,000
  - Dev. traceability database: 95,000
  - Registers and notification forms: 69,000
  - Training and outreach: 63,000
  

- **Estimated annual running costs: €685,000**
  - Individual ID devices: 240,000
  - Computerized information system services: 76,000
  - Network connectivity costs: 118,000
  - Registers and notification forms: 24,000
  - Human resources & training: 87,000
  - Data entry: 140,000
  
  Source: Toto, A. (2010)  *Excludes costs at other nodes

Ear tags: $1.82 – 2.07 (USD/tag)

2014: 3.8 mil. tags - 6.9 mil USD

Source: Meat Board of Namibia
Other considerations

- Overall: Benefits are enormous

- Use of AIS and traceability to meet standards requirement

- Benefits & costs depend on adequacy of traceability and AIS, industry and chain structure
  - Adequacy AIS – Botswana example (ease, costs support etc.)

- Smallholders producers – considerations to include smallholders pastoral settings?

- Positive externality – social welfare benefit and are costs being shared equitably?

- Private standards: scientific and market value
Thank you