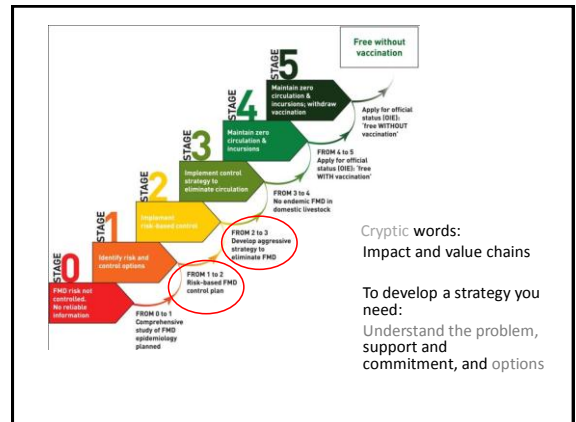**Slide 1**

Enhanced FMD control through the integration of socio-economic approaches:
the why and a toolbox

C. Bartels, **N. de Haan**, J. Hinrichs, M. McLaws and J. Rushton

FAO and RVC

eofmd

Slide 2

Cryptic words:
Impact and value chains

To develop a strategy you need:
Understand the problem, support and commitment, and options
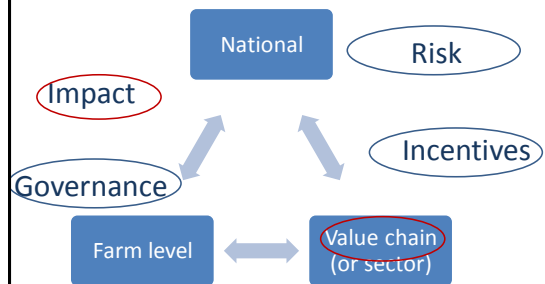
Slide 3

Strategy development

- How big is the problem?
  Epidemiology and economics – but does size matter?

- Who is going to fund it?
  Government? Which part? How much?

- Whose problem?
  Support and commitment

**Slide 4**

Three specific constituencies and four issues with FMD

National — Risk — Impact — Incentives — Governance — Farm level — Value chain (or sector)

Slide 5

Impact on the different constituencies

Slide 6

The role of impact

- Justification for decision making on public funding and awareness raising
  - Is the most requested activity for us
  - Different levels – including international and (more recently) livelihoods
  - Headlines of severe impact – what do we want to say?
- To inform the strategy
  - Direct and indirect impacts
    - the cost of interventions
  - Who is at risk?
  - Support and commitment

Work in progress!

Adapted from Perry and Randolph (2003)
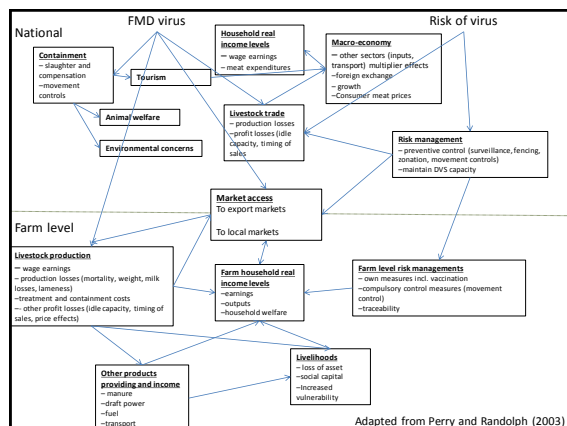
National level

• Some tools in the toolbox
  – SAM
  – CGE
  – Alive

National level tools

• Social Accounting Matrix (SAM) Analysis
  – Static national economic impact assessment tool to capture detailed interdependencies between institutions and sectors/regions.
  – Account for "multiplier" effects to attain better understanding of longer-term, more inclusive stakeholder interests
• Computable General Equilibrium (CGE) Modeling
  – Dynamic modeling of market interactions
  – Extend SAM framework to simulate market activity
  – Highlight the role of prices and scarcity in determining the incidence of economic impacts

Source: David Roland-Holst at workshop 'Harmonize the approach to determine socio-economic impacts of FMD Bangkok, 5-6 September 2012'

SAM Example:
Swine FMD in Missouri

	Animals Lost	Direct Impact	Indirect Impact	Total Economic Impact
Total Cattle	5,832	$6,337,558		
Total Swine (domestic)	12,115	$1,096,119		
Sheep	570	$60,863		
Goats	141	$12,691		
Total	**18,658**	**$7,507,231**	**$4,434,037**	**$11,941,268**
Outbreak Duration	45 (days)			

Source: David Roland-Holst at workshop 'Harmonize the approach to determine socio-economic impacts of FMD Bangkok, 5-6 September 2012'

Alive toolkit

Question: GDP of livestock is underestimated

A series of data and expert opinion

A database on:

• A more comprehensive calculation of GDP
• Better characterization of the systems
• Competitiveness of the sector
• Degree of dependence on different species in nutrition and income
• The role of diseases

ALive (2011)

Data for Zambia

Commodity	Unit	LSIPT	Other references	
Meat				
Beef	TEC	56 000	60 000	FAOSTAT, 2010
			42 000	SOFA, 2010 (referring FAO 2007)
			52 000	FAOSTAT, 2007
Goat	TEC	3 100	8 500	FAOSTAT, 2010
Pork	TEC	32 000	16 500	FAOSTAT, 2010
Poultry	TEC	42 000	42 500	FAOSTAT, 2010
Total meat	TEC	133 000	127 500	FAOSTAT, 2010
Other product from cattle				
Cow milk	Liter	306 000	215 000	METAP, 2008 (commercialized milk)
			88 500	FAOSTAT, 2010
Hides	Tons	900	170	Leather industry assoc, 2010
			7 000	FAOSTAT, 2010
Energy (traction)	'000 days	28 000		
Organic matter				
Cattle	Tons	37 000		
Poultry	Tons	70 000		
Pigs	Tons	190		
Total OM	Tons	107 000		

ALive (2011)

On animal diseases

4. Summary of scores of impact of animal diseases on households (HHD), VC, LS population (Intensification)					
	CBPP	FMD	ASF	Theileiriosis	ND
Final scores					
total HHD	5,78	5,05	0,09	5,77	0,58
total VC	2,66	6,00	0,41	1,60	0,02
total MPS	11,44	13,78	7,21	2,85	1,19
Ranking					
total HHD	1	3	5	2	4
total VC	2	1	4	3	5
total MPS	2	1	3	4	5
Final priorities					
disease ordering: after bargaining finalize ranking of disease for interventions					

Final scoring is indicative and reflects the relative impact of disease according to various socio economic structures of the Livestock Sector

ALive (2011)

Farm level

From national to farm level
- The majority of impact studies have been done at national level – to influence public spending
- Important but does not give any nuances or any understanding of the people being impacted, the people at risk or the incentives
- Backyard – are out of the "system" – Depner: *without them you will not succeed*

- Some tools in toolbox at farm level
  - Livelihoods analysis
  - Direct costs
  - Household economy approach

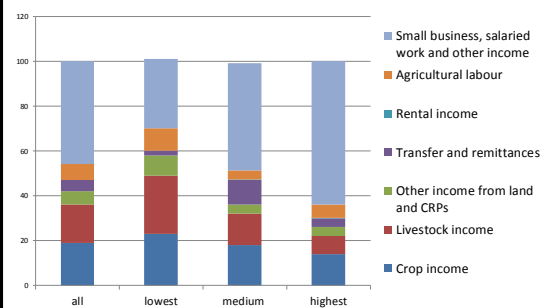## Livelihoods analysis: Contribution of livestock to income and protein requirement of households

	Livestock as source of income		Main source of protein	
	%	species	LG species	MR species
Income level				
1st tercile (poorest)	45%	P	**C/S**	**G**
2nd tercile	30%	P/C	**C/G/S**	**P/G/S**
3rd tercile (richest)	35%	C	C	C/P
Main activity				
Livestock dominant	70%	P/C	**C**	**C**
Crop dominant	20%	P/P	C	G/S
Off farm dominant	16%	V	**C**	**S/C**
Diversified activties	30%	V	C	S/C

C=cattle, G=goat, S=pig, P=poultry

ALive (2011)

Farm level: case study Cambodia

- Small business, salaried work and other income
- Agricultural labour
- Rental income
- Transfer and remittances
- Other income from land and CRPs
- Livestock income
- Crop income

Sources of household income by income tertile

Shankar et al. (2011)

Farm level: case study Cambodia

Disease burden: FMD costs as percentage of household income

Sample	mean	median	std dev
all infected households	7.4	3.9	9.6
higher tertile	4.4	3.3	4.3
medium tertile	7.3	5.8	13.5
lower tertile	11.7	5.8	13.5

A serious shock? Health burdens of malaria:
Sri Lanka: 9.9 % (Attanayake et al. 2000)
Malawi: 7.2 % (Ettling et al. 1994)
Nigeria: 11.04 % (Onwujekwe et al. 2000)

Shankar et al. (2011)

Farm level

- Under-represented?
- Smallholders: Diversification a means of survival
- Attribution at farm level
- On average – the nuances are missing on most of these studies so also limited data and information on exactly who gets impacted and who is at risk
- But can inform decision makers about their own constituencies

- Need more research on less data intensive approaches – but this needs to be better informed by the whole debate and question being posed

Value chains as one of the constituencies

Research on value chains shows

- Value chains are not *value free:* money needs to be made
- *People in the value chains are not benign*
- Value chains produce a product
- Value chains provide livelihoods

- Research within value chains can help identify:
  – People involved with the chains (amounts and types)
  – Livelihoods made from value chains (degree and importance)
  – Risks within the chain
  – The money circulating within the chains
  – Power relationships within the chains
  – Geographical reach
  – Pathogens and toxins circulating

Value chains and FMD strategy

- FMD is very dynamic and happens within a context – a value chain
- What people do within the chain influences whether FMD spreads or not, and whether it is controlled or not
- It shows where there are failures in the systems and thereby control points
- If FMD hits, they might reshape themselves
- Research on value chains allows those developing strategies to identify :
  – who these people are
  – how they interact
  – why they behave
  – how to ensure support and commitment

Value chain as a tool

- Mapping the value chain and data collection
  – Initial mapping
    - Expert consultation
  – Filling the value chain
    - Focus groups
    - Semi-structured interviews
    - Secondary data – sector development
    - Primary surveys
    - Tagging vehicles

Value chain in Iran
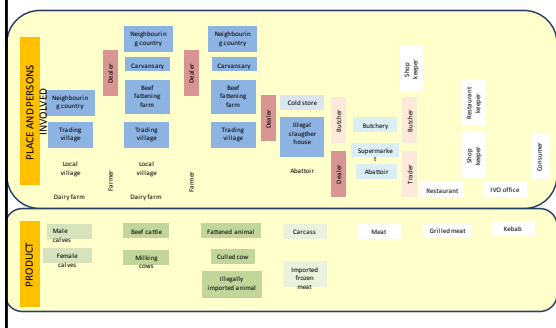
Value addition along the chain

	Traditional Beef	Commercial Beef	Traditional Dairy	Emer. Dairy	Traditional Pork
	ZMK/kg or %		ZMK/lt. or %		ZKM/ Unit or %
Producer	16,000	20,000		2,200	180,000
Collector	+15 % (32%)		+25 % (100%)	+10% (3%)	+55 % (50%)
Market					
Butcher Abattoir/ Dairy		25 % (17%)		+127%	+43% (50%)
Supermarket/ Retailer/Rest.	+35% (68%)	80% (83%)		+26% (34%)	
Consumer	25,000	45,000	2,500	6,300	400,000

Different incentives

Governance

ALive (2011)

The tip of the iceberg: incentives and governance

- Value chains help us understand one of the main incentives – the *economics* since it is a product passing through
- It helps in understanding *who* would have incentives and disincentive to participate in a control program – it starts to give an idea on how to develop public private partnerships – and who pays for what
- *Governance* – who sets the rules, who decides what gets produced, who has the power…….legislation and beyond
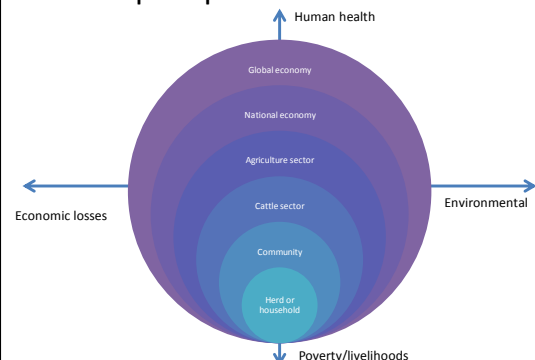- Still need to unpack within systems and how to make them *win win – and if not win win, stop from doing damage*

Research requests

- Any good strategy needs to have GOOD data on the socio-economic impact of the disease, through doable data *light* approaches
- And good cooperation with the people involved!

- This means more research is needed :
  - on understanding impacts, value chains, incentives, governance and risk (perceptions and actual)
  - links between the understanding and the legislation
  - to develop simpler approaches and models (a new generation of approaches)
  - to advise on the right data and models – a closer link with the epidemiologists
  - to develop a toolbox – started with a value chain risk assessment

THANK YOU

Impact potential and level

Impact metrics

Source: David Roland-Holst at workshop 'Harmonize the approach to determine socio-economic impacts of FMD Bangkok, 5-6 September 2012'

Source: Perry and Randolph (2003)

Framework

Situation analysis and preliminary risk appraisal

Detailed risk & value chain analysis to identify risk reduction options

Option appraisal

- Value chain mapping (3P's)
- Stakeholders consultation and validation
- Governance, incentives
- Can FMD enter, survive, leave from each

- Understanding FMD
- Risk hotspots Risk pathways
- Identify CCPs
- Identify risk reduction measures

- Assess impact on stakeholder
- FMD control strategy

FMD impact + FMD epidemiology