Poultry market chains

Description, usage and recommendations

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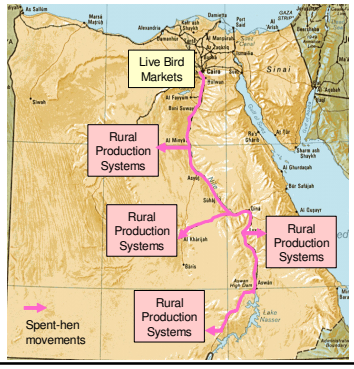
JAPAN

Australian Government AusAID

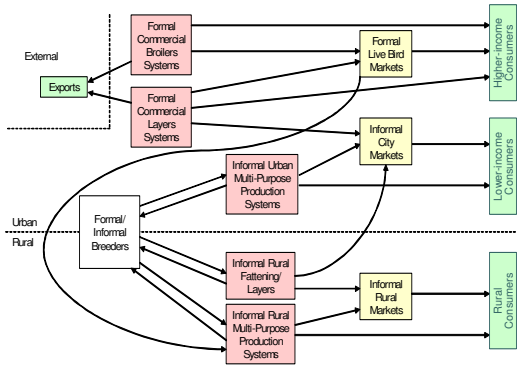
What is a poultry market chain?

- Diagram depicting components, structure and inter-relationships in a system
  - Started as an economic and managerial tool but has been adapted (partially) to disease control
- The poultry industry comprises a set of different but interlinked value chains
- Visually explicit
  - Suited to communicating to experts or lay people
  - Enables policy analysis and choices between different options
- Can represent different levels of detail

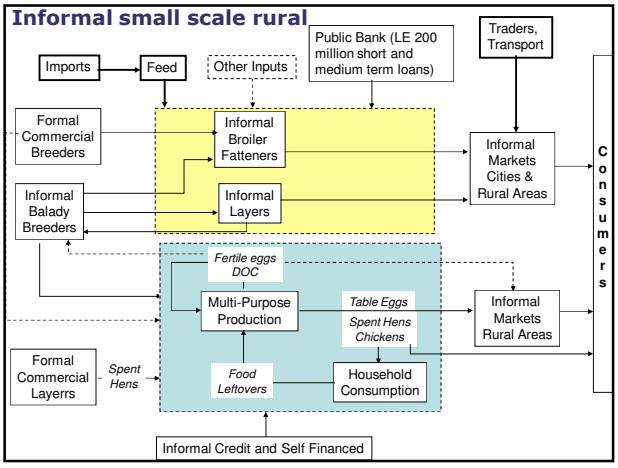
Map 6. Formal layer chain: Geographical dimension (Egyptian case)



Map 0: Entire (chicken) industry



Informal small scale rural



Intended use of market chains (1)

- Evaluate strategies
  - Epidemiological and socioeconomic interactions
  - Maximize efficiencies and leverage
- Guide policy to improve surveillance, control and rehabilitation
  - Cost effective surveillance
  - Culling, compensation and vaccination policies
  - Industry restructuring options
  - Biosecurity improvements

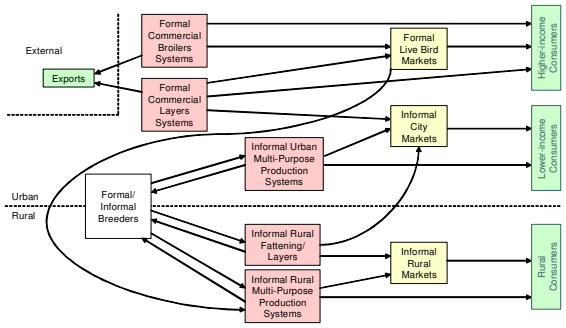
Intended use of market chains (2)

- Facilitate analysis
  - Where to outbreaks concentrate?
  - Where do risks concentrate?
- Effects of interventions
  - Impact on disease
  - Effects on industry
  - Effects on vulnerable groups
- Communication tool
  - Lay audience
  - Experts

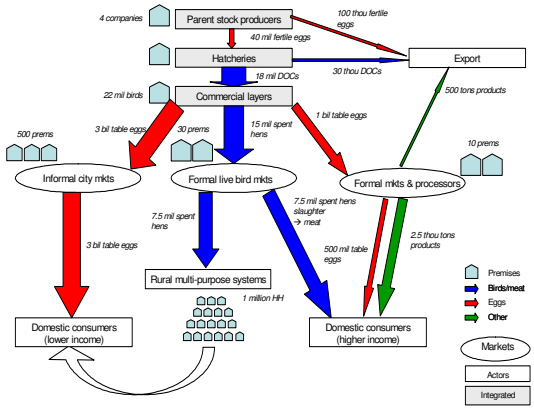
Market chain subsets

- Sector subsets eg
  - Commercial layer
  - Commercial broiler
  - Farmed ducks
  - Village chickens
  - Song birds
  - (fighting cockerels; wild birds)
- Information subsets
  - Overview
  - Volume
  - Value
  - Relationships
  - Current control
  - Risks

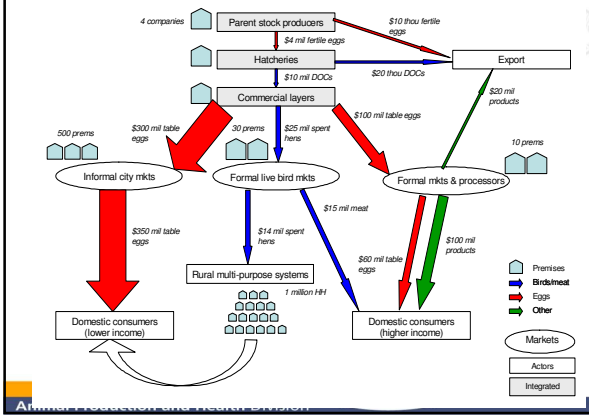
Map 0: Entire (chicken) industry



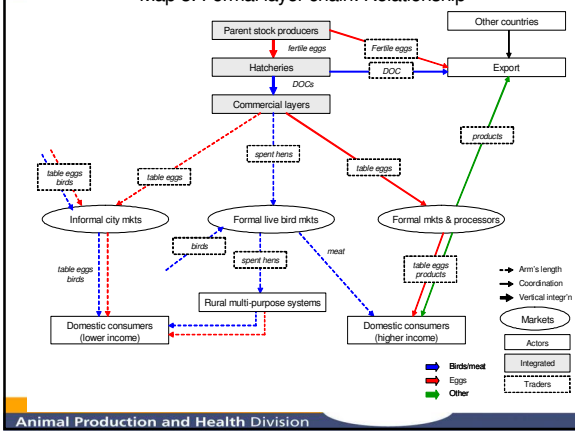
Map 1. Formal layer chain: Volume



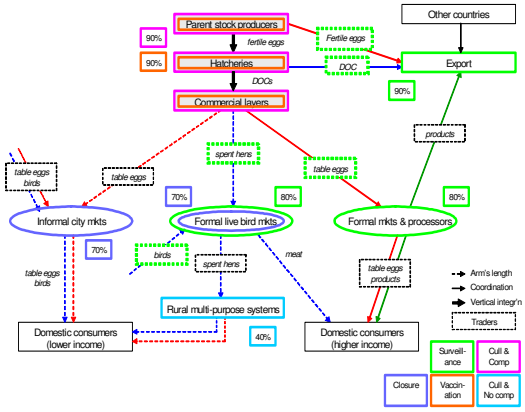
Map 2. Formal layer chain: Value



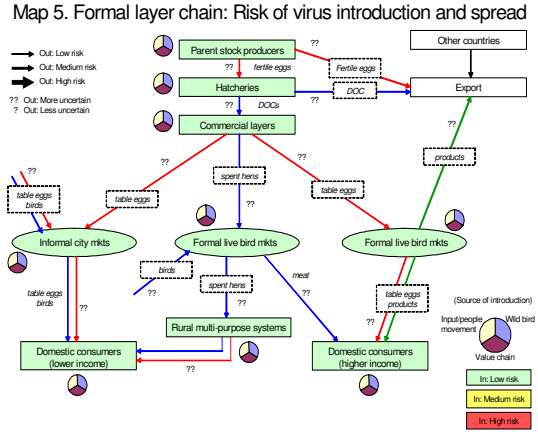
Map 3. Formal layer chain: Relationship



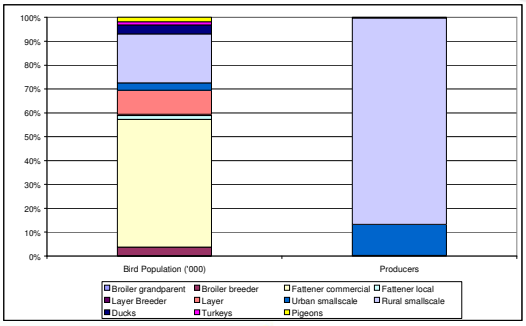
Map 4-1. Formal layer chain: Relationship + current controls



Map 5. Formal layer chain: Risk of virus introduction and spread

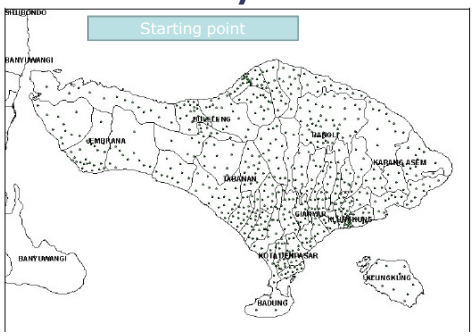


Outputs and recommendations?? - undeveloped



Market chain analyses - Bali

Starting point



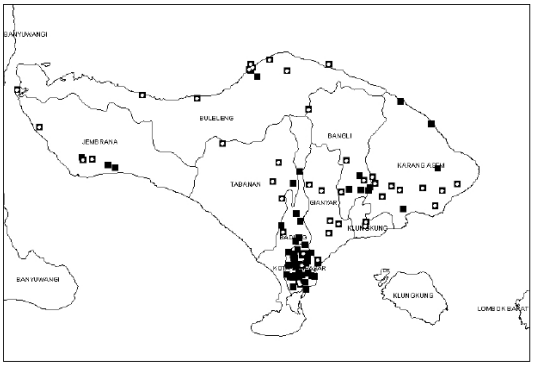


Figure 1: Location of markets visited (■) and confirmed as live bird markets (◘) in Bali (n=49)

Demographic information = broilers

No	Regency	Farms	DOC	DOC value (x 1,000,000) rupiah	Feed value (x 1,000,000) rupiah	ND and Gumboro Vaccine cost (x 1,000,000) rupiah	Medication (x 1,000,000) rupiah	Total Value of the Harvested Broiler chicken (x 1,000,000) rupiah	Total value/year (x 1,000,000) rupiah[a]
1	Karangasem	54	1,025,000	3,331.250	10,147.500	98.4	153.75	13,068.75	26,798.55
2	Klungkung	46	995,000	3,233.500	9,850.500	95.52	149.25	12,686.25	26,015.27
3	Bangli	274	4,884,000	15,873.000	48,351.600	486.86	732.60	62,271.000	127,697.055
4	Gianyar	72	1,311,500	4,262.375	12,983.850	125.904	196.725	16,721.625	34,290.478
5	Badung	28	580,750	1,887.437	5,749.425	55.752	87.1125	4,956.375	12,715.8663
6	Tabanan	253	3,876,000	12,597.000	38,372.400	372.096	581.400	32,964.000	84,886.896
7	Jembrana	94	1,462,000	4,753.125	14,473.800	140.352	219.300	12,431.250	32,071.827
8	Buleleng	-	-	-	-	-	-	-	-
9	Denpasar	-	-	-	-	-	-	-	-
	Total	821	14,134,250	45,937.937	139,929.075	1,356,886	2,120.1375	155,079.25	344,423.2855

Table 3. Number of Broiler Farmers in Bali

Demographic information = commercial chickens

No.	Regency	PIR (Nucleus and Plasma) System	Independent System
1	Denpasar	-	1
2	Badung	28	5
3	Tabanan	253	6
4	Gianyar	72	7
5	Klungkung	46	-
6	Bangli	274	-
7	Karangasem	54	17
8	Jembrana	94	4
9	Buleleng	-	6
Total		**821 (94.4%)**	**46 (5.6 %)**

Table 4. Poultry slaughter house numbers in Bali

Demographic information = slaughterhouses

Regency	Large (cap. 2000/day)	Medium (cap. 500/day)	Small (house hold)[a] (cap. < 100 /day)
Denpasar	-	8	36
Badung	-	1	150
Tabanan	1		15
Gianyar	-	-	2
Klungkung	-	-	2
Bangli	-	-	4
Karangasem	-	-	18
Jembrana	-	-	16
Buleleng	-	-	49
Total	**1 (0.3%)**	**9 (3%)**	**292 (96.7%)**

Volume, value and inter-relationships

Diagram 1. MARKET CHAIN BROILERS - PIR SYSTEM

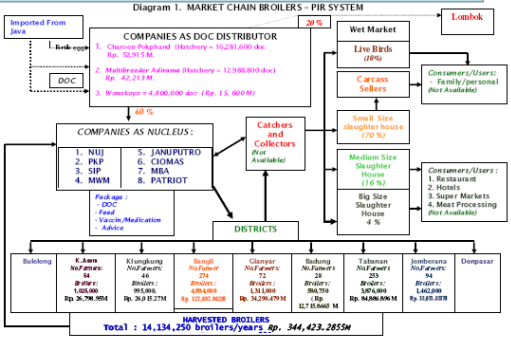


Diagram 3. Layer market chain in Bali

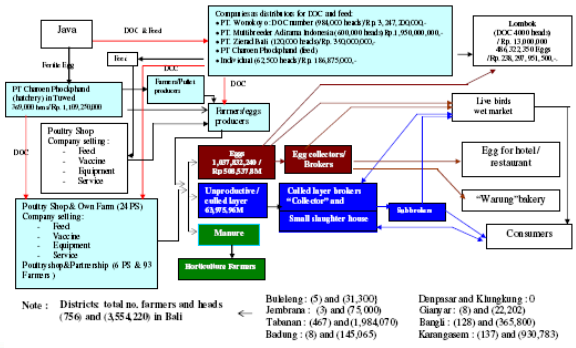


Figure 2. Map of DOC layers, eggs, unproductive hens and manure in Bali

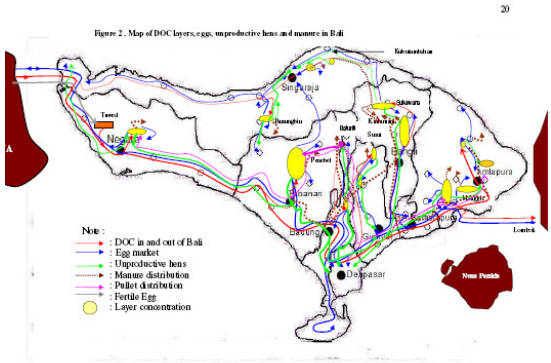
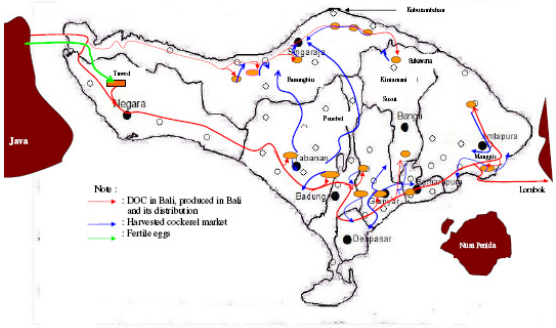


Figure 3. Road Map of DOC cockerels harvested in Bali Province

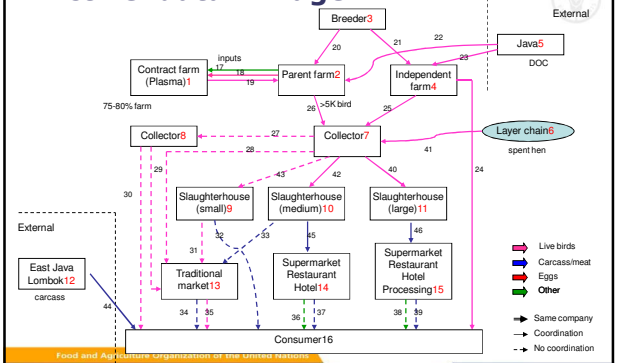


- Nice pictures
- Summary tables
- Explanatory text

BUT

'Frozen data' a major weakness
- Restricts analysis
- Limits conclusions/recommendations
- Restricts modeling options
- Poor interface for risk analysis

'Active' data linkage



data interface from maps_RNT.xls [Compatibility Mode] - Microsoft Excel

line	chain	category from	category to	commodity	conveyor	actor from (nam	actor to (name)	company
17	broiler commercial	parent farm	contract farm (plasma)	other	risk items	parent farm2	contract farm (pla	not same
18	broiler commercial	parent farm	contract farm (plasma)	live birds	live birds	parent farm2	contract farm (pla	not same
19	broiler commercial	contract farm (plasma)	parent farm	live birds	live birds	contract farm (pla	parent farm2	not same
20	broiler commercial	breeder	parent farm	live birds	live birds	breeder3	parent farm2	not same
21	broiler commercial	breeder	independent farm	live birds	live birds	breeder3	independent farm	not same
22	broiler commercial	Java	parent farm	live birds	DOC	Java5	parent farm2	not same
23	broiler commercial	Java	independent farm	live birds	DOC	Java5	independent farm	not same
24	broiler commercial	independent farm	consumer	live birds	live birds	independent farm	consumer16	not same
25	broiler commercial	independent farm	collector	live birds	live birds	independent farm	collector7	not same
26	broiler commercial	parent farm	collector	live birds	live birds	parent farm2	collector7	not same
27	broiler commercial	collector	collector	live birds	live birds	collector7	collector8	not same
28	broiler commercial	collector	market traditional	live birds	live birds	collector7	market traditional	not same
29	broiler commercial	collector	market traditional	live birds	live birds	collector8	market traditional	not same
30	broiler commercial	collector	consumer	live birds	live birds	collector8	consumer16	not same
31	broiler commercial	slaughterhouse (small)	market traditional	carcass/meat	carcass/meat	slaughterhouse (s	market traditional	not same
32	broiler commercial	slaughterhouse (small)	consumer	carcass/meat	carcass/meat	slaughterhouse (s	consumer16	not same
33	broiler commercial	slaughterhouse (medium)	market traditional	carcass/meat	carcass/meat	slaughterhouse (n	market traditional	not same
34	broiler commercial	market traditional	consumer	carcass/meat	carcass/meat	market traditional	consumer16	not same
35	broiler commercial	market traditional	consumer	eggs	eggs	market traditional	consumer16	not same
36	broiler commercial	retail supermarket	consumer	other	risk items	retail supermarket	consumer16	not same
36	broiler commercial	retail restaurant	consumer	other	risk items	retail restaurant14	consumer16	not same
36	broiler commercial	retail hotel	consumer	other	risk items	retail hotel14	consumer16	not same
37	broiler commercial	retail supermarket	consumer	carcass/meat	carcass/meat	retail supermarket	consumer16	not same
37	broiler commercial	retail restaurant	consumer	carcass/meat	carcass/meat	retail restaurant14	consumer16	not same
37	broiler commercial	retail hotel	consumer	carcass/meat	carcass/meat	retail hotel14	consumer16	not same
38	broiler commercial	retail supermarket	consumer	other	risk items	retail supermarket	consumer16	not same
38	broiler commercial	retail restaurant	consumer	other	risk items	retail restaurant15	consumer16	not same
38	broiler commercial	retail hotel	consumer	other	risk items	retail hotel15	consumer16	not same
38	broiler commercial	processing	consumer	other	risk items	processing15	consumer16	not same
39	broiler commercial	retail supermarket	consumer	carcass/meat	carcass/meat	retail supermarket	consumer16	not same
39	broiler commercial	retail restaurant	consumer	carcass/meat	carcass/meat	retail restaurant15	consumer16	not same
39	broiler commercial	retail hotel	consumer	carcass/meat	carcass/meat	retail hotel15	consumer16	not same
39	broiler commercial	processing	consumer	carcass/meat	carcass/meat	processing15	consumer16	not same
40	broiler commercial	collector	slaughterhouse (large)	live birds	live birds	collector7	slaughterhouse (la	not same
41	broiler commercial	chain layer commercial	collector	live birds	spent hen	chain layer comm	collector7	not same
42	broiler commercial	collector	slaughterhouse (medium	live birds	live birds	collector7	slaughterhouse (n	not same
43	broiler commercial	collector	slaughterhouse (small)	live birds	live birds	collector7	slaughterhouse (s	not same
44	broiler commercial	processor east java	consumer	carcass/meat	carcass/meat	processor east ja	consumer16	
	broiler commercial	processor lombok	consumer	carcass/meat	carcass/meat	processor lombok	consumer16	

Summary: Potential usage

Strengths
- Multidisciplinary
- Governance
- Inter-linkages
- Leverage
  - Trickle down effects
- All players represented
- Detail can vary
- Excellent communication tool
  - attractive

Weaknesses
- Can be 'busy'
- Lack detail
- Proliferation of maps (25+)
- Not all linkages are explicit, or easy
- Must still use other techniques (C-B etc)
- *Does not easily address risk

Where to now?

- Three market chain analyses in Indonesia
  - Bali (2007)
  - Medan (2007)
  - Jakarta (2008)
- Same basic model, but variable application
- How best to use the data?
  - Local usage for specific purposes
  - Mainly demographic usage
- Attempt 'higher usage', with 'active data'
  - Risk
  - Socioeconomic effects
  - Strategy and policy

Thank you