Improving livestock value chains: The example of Vietnam (pigs)

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Global Health Initiative 2015
Chiang Mai, Thailand, 11 February 2015
Research conference: Emerging diseases at convergence of animal,
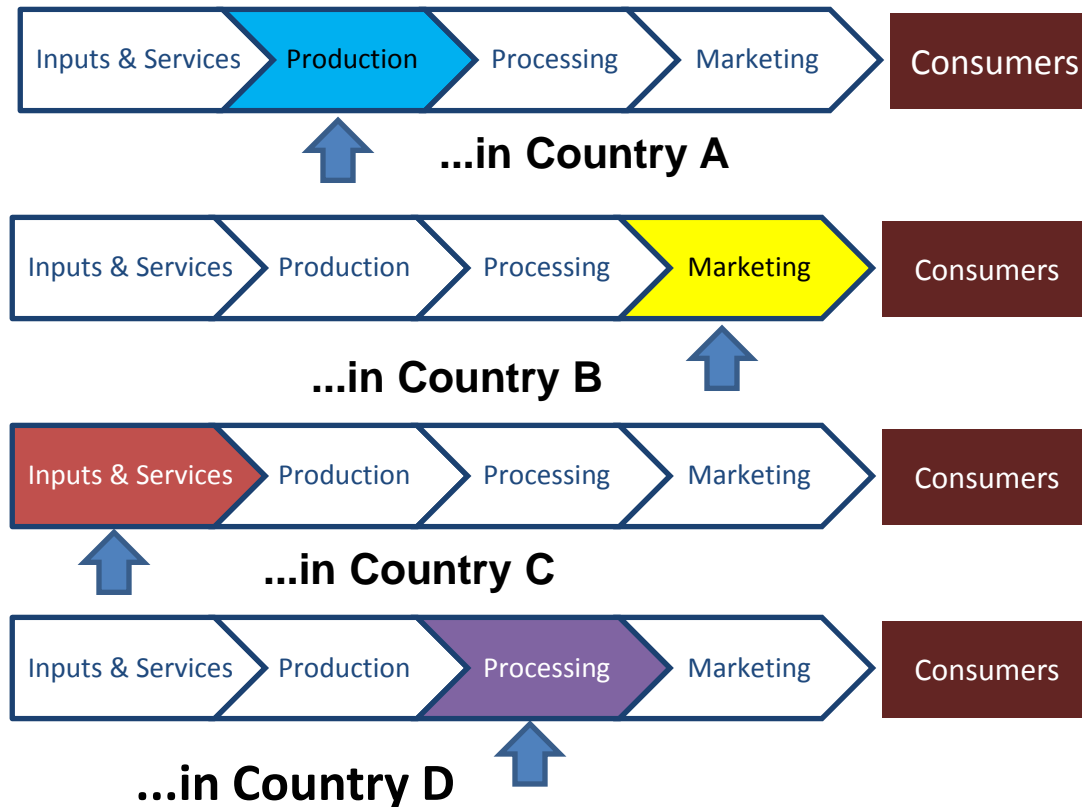human and environmental health

Value chains

Value chains are the linked groups of people and processes by which a commodity is supplied to the final consumer.
Value chain covers more than the production process; it implies also **a flow of information and incentives** between the people involved. Money is sent from the consumer to the different people in the chains.

Understanding the flow of materials (pigs & pork) through a value chain is **important** in **understanding how risk of disease spread** may be produced in the chain, while understanding the **flow and distribution of incentives is key** to **understanding how to manage** those **risks.**

FAO, Animal Production & Helath,2012

Traditional approach was piecemeal

Past ILRI research has focused specific aspects of given value chains, commodities and country.

Inputs & Services → Production → Processing → Marketing → Consumers

...in Country A

Inputs & Services → Production → Processing → Marketing → Consumers

...in Country B

Inputs & Services → Production → Processing → Marketing → Consumers

...in Country C

Inputs & Services → Production → Processing → Marketing → Consumers

...in Country D

WHOLE value chain approach

From focus on production by poor livestock keepers …

| Inputs & Services | **Production** | Processing | Marketing | Consumers |
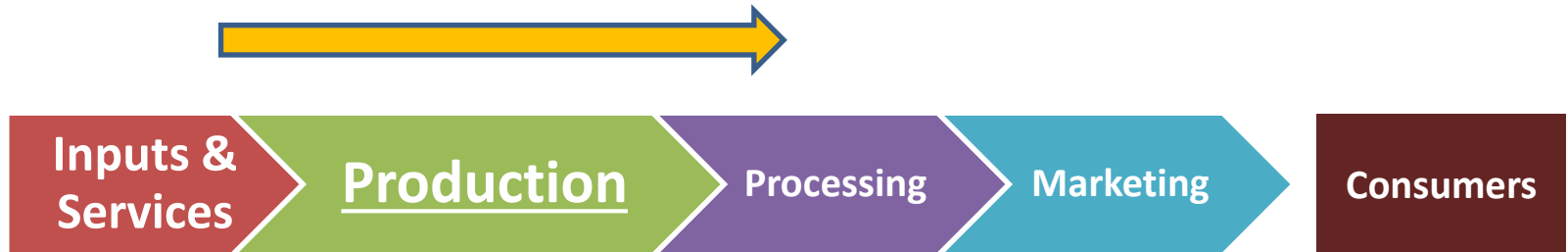
To designing agri-food systems that improve access to nutritionally animal-source foods

| **Poor Consumers** | Marketing | Processing | Production | Inputs & Services |
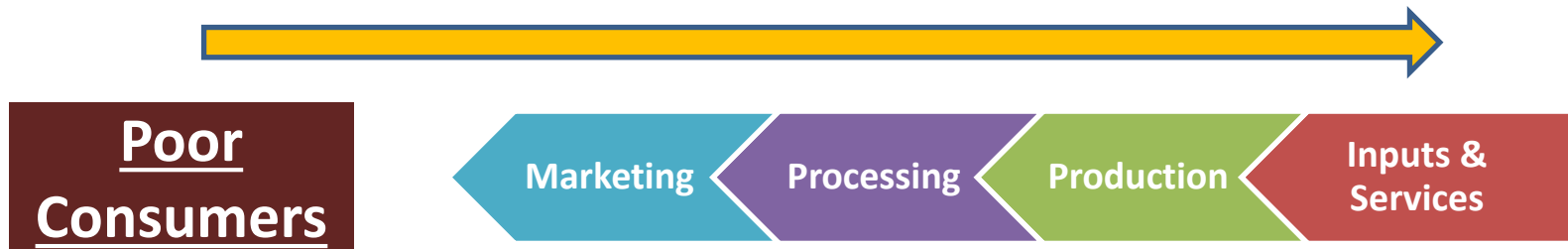
Working in 9 target value chains
under ILRI's CRP 3.7. Livestock and Fish
## Program time scope: 8-12 years
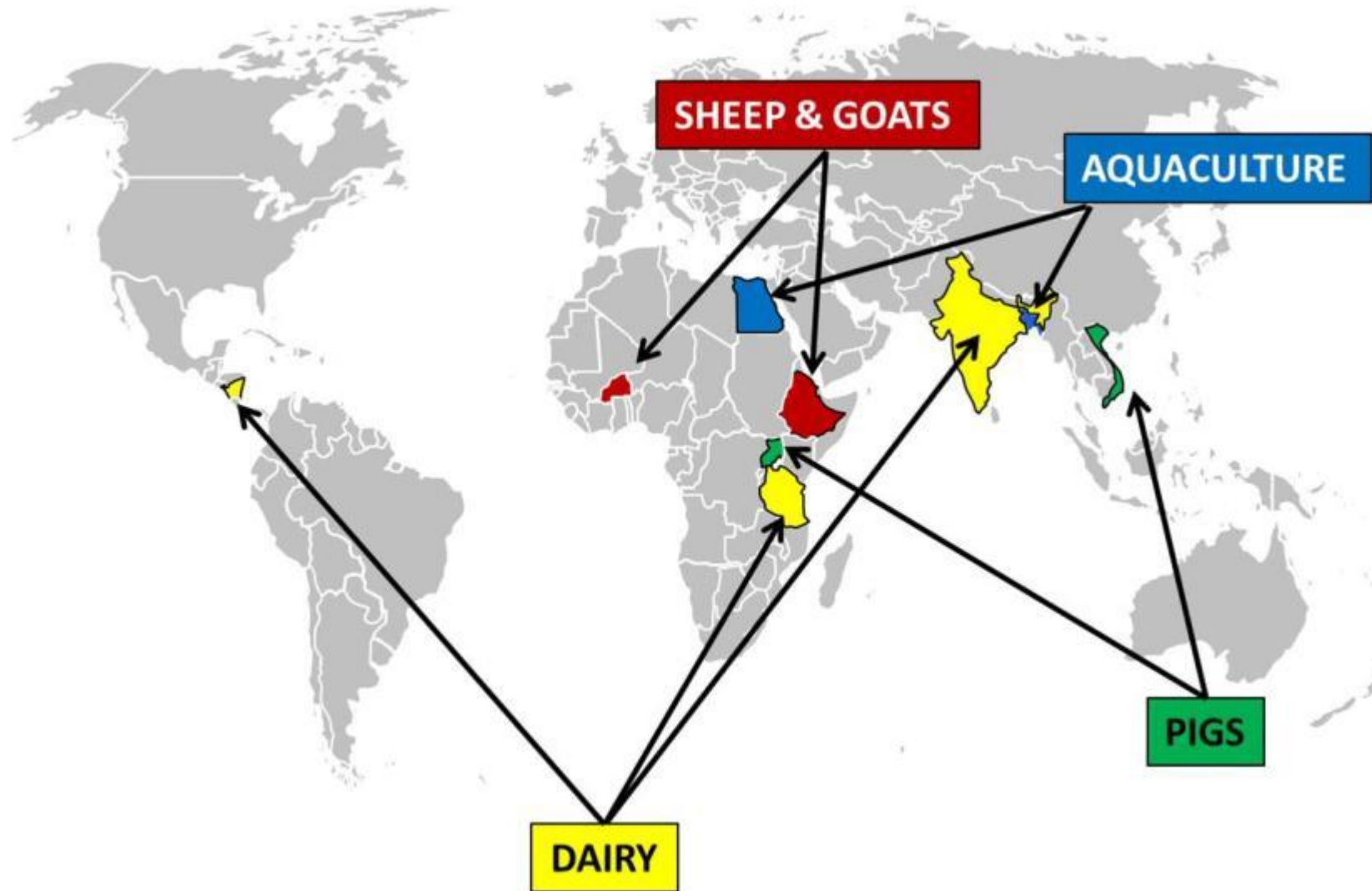
Pig Value Chain in Vietnam

Why pigs in Vietnam

Why pigs in Vietnam

❖ Pork is a **significant component** of the **Vietnamese diet**

❖ **Strong demand for fresh pork** that **smallholders** can **supply through most preferred outlets** by consumers (temporary and permanent markets)

❖ **Dominance of smallholders in pig production**, importance in employment generation, significant contribution to HH income (accounts for 14% of rural HH income)

❖ Projections show that even with no growth from smallholders, **large farms will likely account for only 12%** of the Vietnam pork market share

❖ **Smallholder pig** systems can generate **efficiency gains from low-cost locally-sourced feed**ing options

❖ **Enabling policy environment**: willingness of policymakers, development partners, and stakeholders to engage in R4D initiatives

Relative shares of meat types in livestock production, Vietnam, 2002-2012
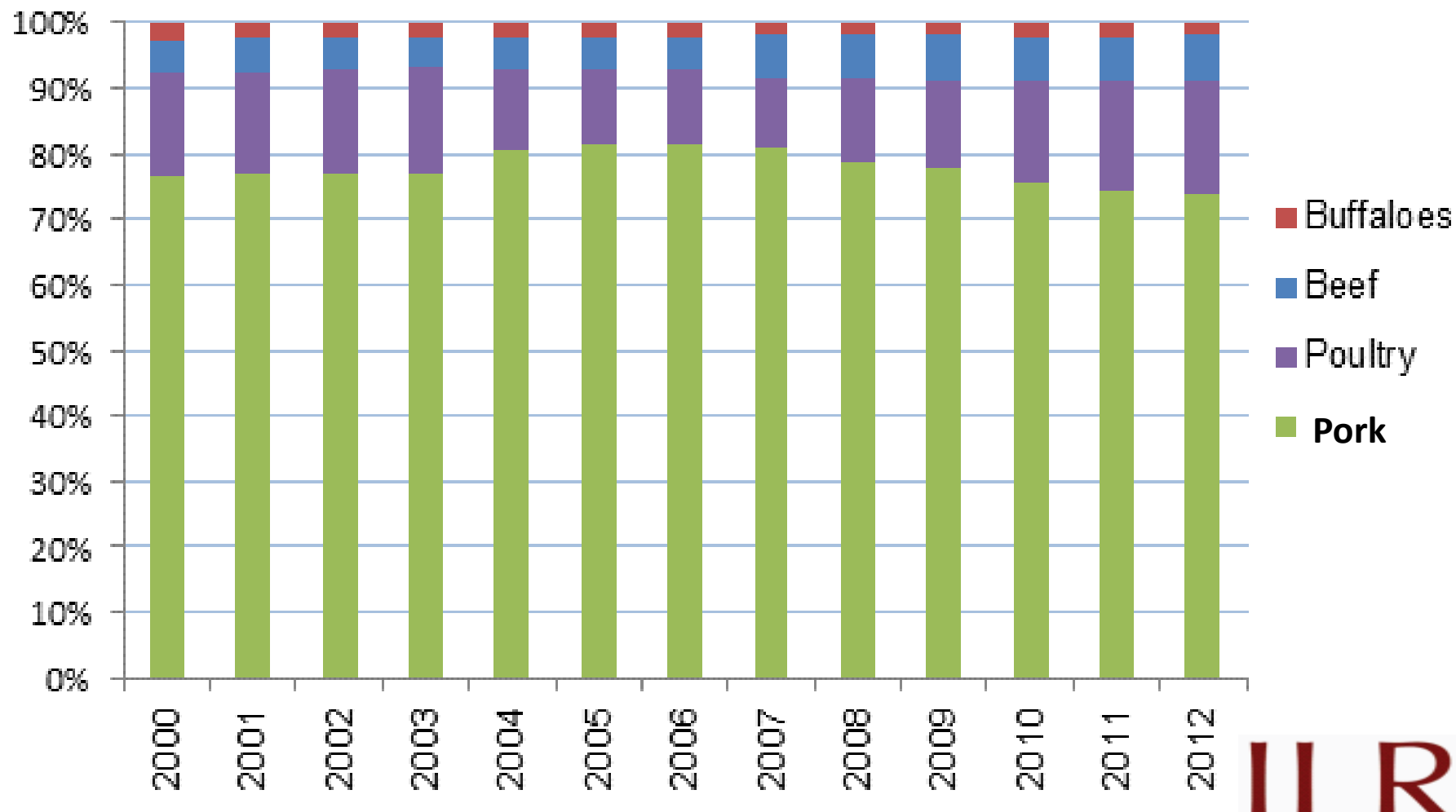
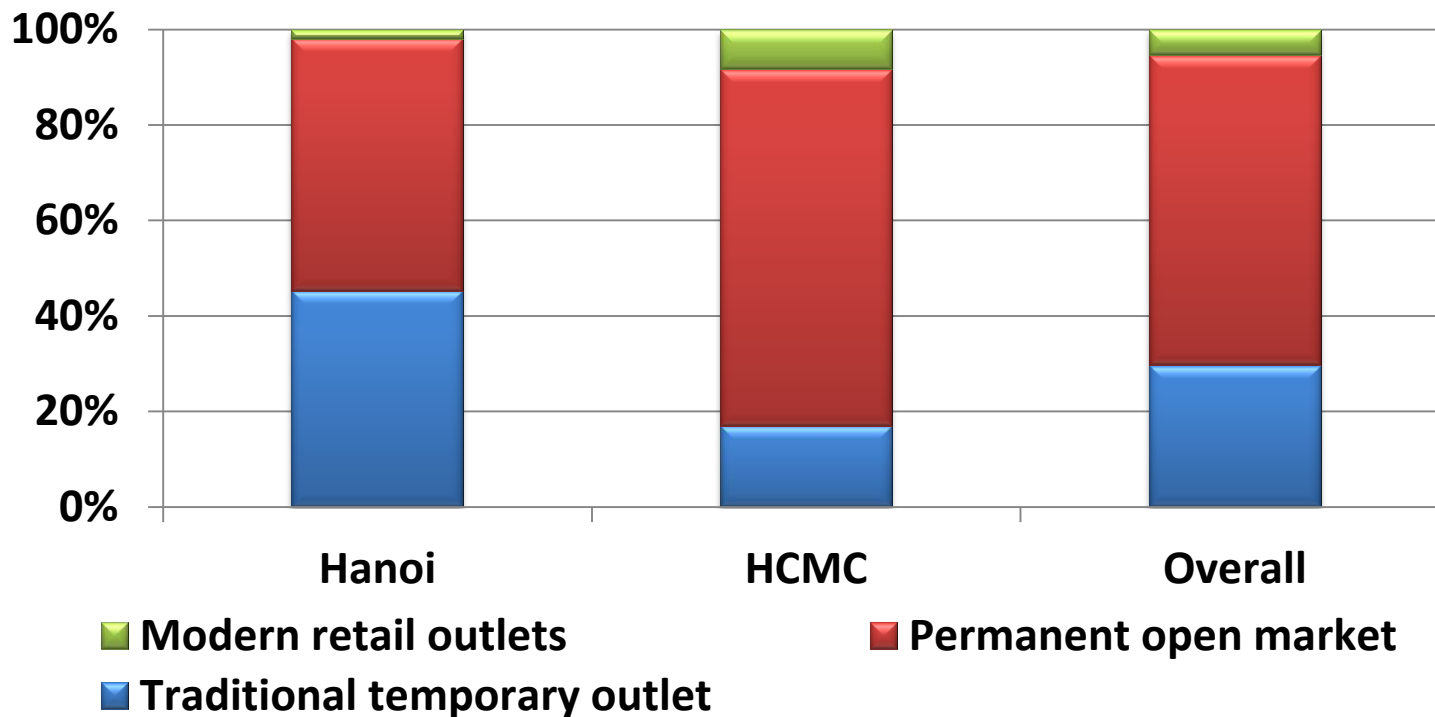**Pork is a significant component of the Vietnamese diet**

Pig production holdings in Vietnam, by scale

Holding type	Herd size	% of national herd (1999)	% of national herd (2006)	Breed
Smallholders or backyard	1–10 pigs	80	64	North: mostly local South: mostly cross with exotic
Small-medium	5–20 sows or 30–100 fattening	10	20	Cross and exotic
Medium	20–500 sows or 100–4000 fattening	5	10	Exotic
Large	>500 sows or >4000 fattening	5	6	Exotic

Dominance of small/medium scale,

significant contribution to HH income

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Preferred market outlets for fresh pork by consumers

Legend:
- ■ Modern retail outlets (green)
- ■ Permanent open market (red)
- ■ Traditional temporary outlet (blue)

Chart axes: 0%, 20%, 40%, 60%, 80%, 100%
Categories: Hanoi, HCMC, Overall

Traditional market outlets remain the most preferred purchase outlets for fresh pork by Vietnamese consumers

Pig Genetics

- Institutions, agents involved
    Public (MARD, research Institutes, universities), private & NGOs
- **Composition of pig herd by type and breed** in Vietnam in 2010
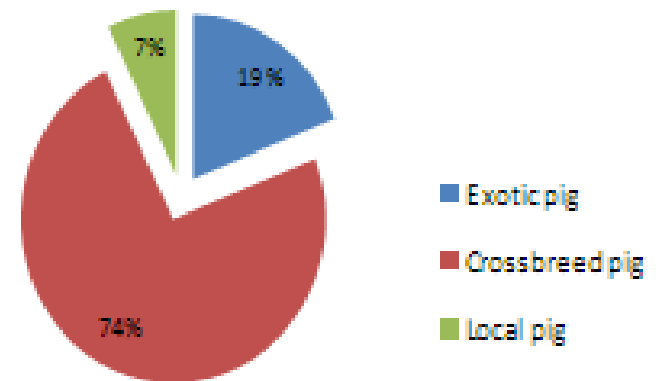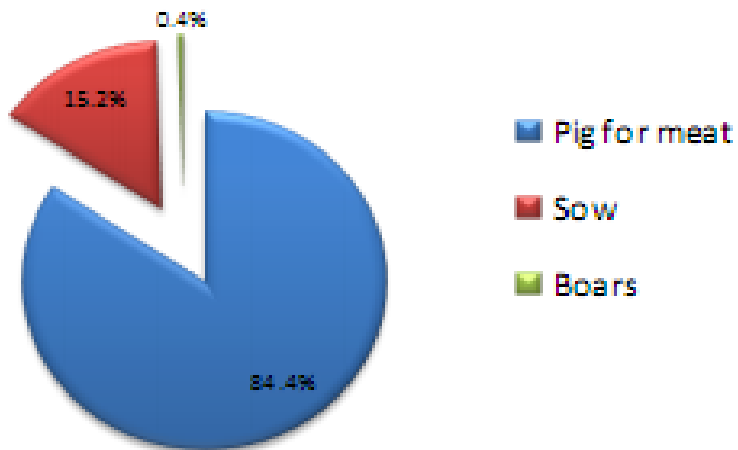
Reproduction issues:

- Small numbers of boars in existing AI facilities

- Quality issues of semen

- Limited accessibility to AI sources of pig producers

- Lack of pig farmers' knowledge on AI

- Less educated AI technicians

Average ranking of major concerns about meat safety by consumers

	HN	HCMC	All
Diseases of livestock	1.2	1.1	1.2
Hormone used in animals	2.8	3.0	2.9
Antibiotic use	3.0	2.9	3.0
Hygiene in market outlet (including meat seller)	3.8	2.6	3.2
Hygiene in slaughtering	3.9	2.8	3.4
Concentrate feeding of animals	3.7	4.1	3.8
Other	3.5	3.1	3.2

Animal diseases tops the list of major concerns of urban consumers about meat safety.

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Demand for pork

- Strong **preference for fresh, un-chilled pork**; Note, that imported pork is frozen pork, natural protection from imports.
- Increased **preference for lean** pork
- Also **increasing demand for local pork** (e.g. HCMC, potential for niche a product due to prime price)
- Future **increases in consumer incomes** are **expected to lead to increased demand for pork** and other meat products

Activities along the pig value chain in Vietnam

Pig sector review: background, trends, policies

Breed/Genetics:

Scoping study and breed and genetic resources (central highlands)

Feed: Feed technology review

Food safety/animal health:

On-going pig risk project (2012-2017): focus on animal and food safety

Indigenous pig system: Scoping study to evaluate the potential of integrated indigenous pig systems (cross CRP)

Supporting activities:

Participatory videoing: document interventions and their uptake

Lab diagnostic review: available tests, vaccines ect.

SD model: ex-ante used tool to evaluate effect of potential interventions

Reducing disease risks and improving food safety in smallholder pig value chains in Vietnam

PIG RISK

Builds on previous projects in Vietnam

(e.g. Improving competitiveness of pig producers)

Improve the livelihoods of rural and urban poor in Vietnam **through improved opportunities and incomes from pig value chains** as a result of reduced risks associated with pork-borne diseases.

Objectives

1. **Assess impacts of pork-borne diseases** on human and livestock and **identify critical points/opportunities** for risk management (Year 1-2)

Producer, SH, market, traders, hospitals, consumers

2. **Develop & test incentive-based innovations** to improve management of human & animal health risks in smallholder pig VC (Year 3-4)

Identify best bets ➡️*validate* ➡️*apply* ➡️*evaluate/adjust* ➡️ *re-apply* ➡️*scaling out*

3. **Communicate the lessons and tools** learned to sustainably improve capacity to assess and manage risks in the smallholder pig chain

Stakeholder consultations, round table, policy briefs

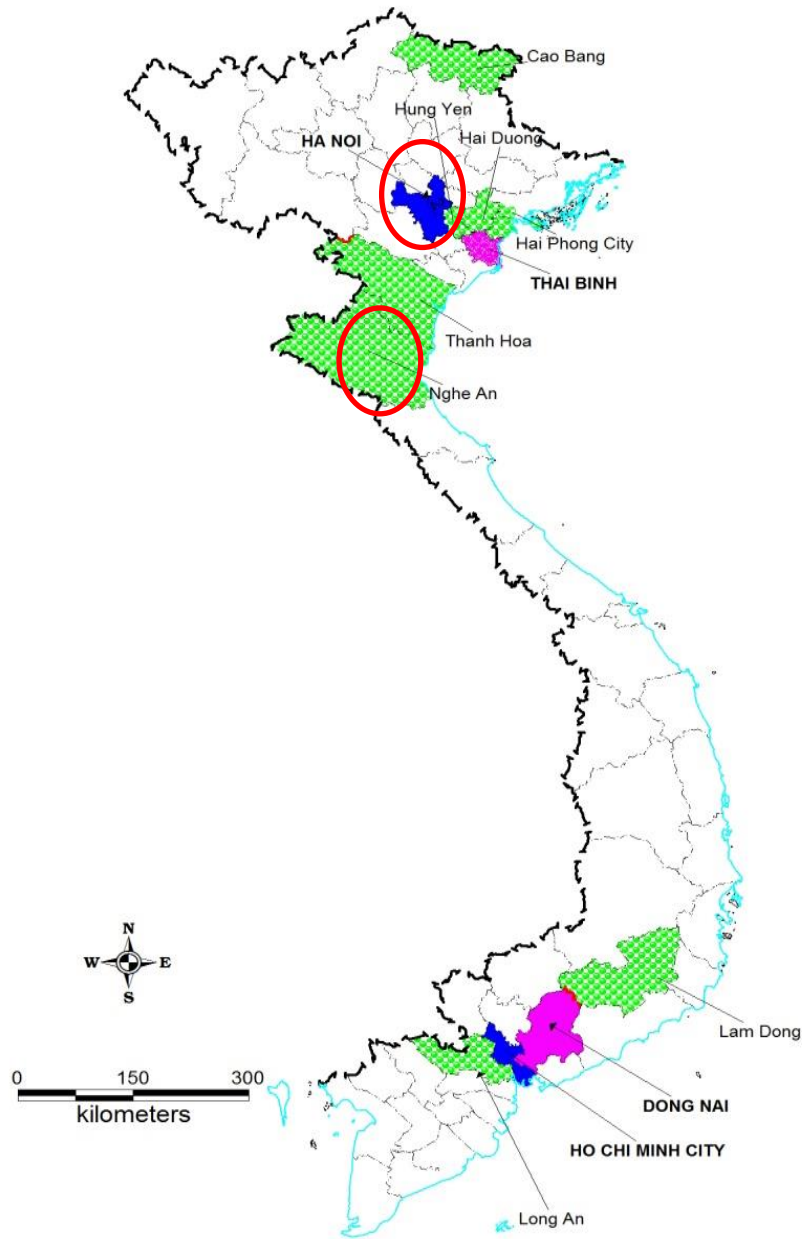**Work through partners**: *Universities, MARD, research institutions, NGO's,*

Various expertise: *Vets, human health, environment, socio econ, social science*

Assessment

Interventions (best bets)

Communication/ dissemination/ capacity building

Pig risk project sites

Assessment (Year 1-3)

– **Literature review** (animal Health and public health)

– **PRA** (producer, SH owner/worker, retailer, trader, consumer, input suppliers)

– **Desk study**, cost of illness (hospital cases)

– **Basle lines** (400 HH with pigs) in 2 provinces

– **Longitudinal** surveys:

- Farm/slaughter house and markets (12months/4 sampling rounds for biological samples) (microbiological risk assessment)

- HH with pigs (fortnightly visits for 1 year)

- Local vet stations (monthly reports)

- Consumer (monthly)

– **Biological/chemical hazards** (Salmonella, E-coli, Strep suis/ Difterex)

– Biological **sampling on-farm** (fecal, serum, oral fluid)

Assessment: Results from RPA- Animal Health

Ranking of pig production constraints, as perceived by farmers by region

Problem/Constraints	Ranking	
	Hung Yen	Nghe An
Feed quality	na*	1
High feed price	na*	2
Low quality of veterinary drugs	3	3
Low pig price	na*	4
Lack of capital	1	5
Lack of knowledge and skills in animal health management	2	-
Lack of veterinary doctors/ para-vet	4	-
Disease	5	6

*Farmers perceived that these constraints have never been addressed and cannot be solved by themselves. Therefore they consider these as given and did not rank them

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Assessment: Results across different survey tools

Pig diseases, as perceived by farmers or from reviews

Literature review	PRA	BLS	Longitudinal survey	Serological survey
FMD	FMD	FMD		
PRRS	PRRS	PRRS	PRRS	on-going
CSF	CSF		CSF	
Pastorellosis	Pastorellosis	Pastorellosis	Pastorellosis	
Paratyphoid suum				
Edema disease	Edema disease	Edema disease	Edema disease	
Erysipelas				
Porcine High Fever Disease (PHFD)				
	Salmonellosis	Salmonellosis	Salmonellosis	

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Preliminary result: Animal health – farm management

Good animal husbandry practice deficits observed:
- ✓ Rare use of **disinfection matrasses**
- ✓ Farmers usually don't wear **protective clothing or boots**
- ✓ **Visitors** are often **able to access** the pig area
- ✓ Risky practices when **handling of sick and dead animals**: e.g. selling or home consumption
- ✓ **Pig feed storage** (e.g. signs of moisture)

Endo-parasitic prevalence indicates a problem:
- ✓ 2/3 of fecal samples are positive for at least one type of pig parasite (e.g. Eimeria, Strongyloides, Trichocephalus suis, A. suum, Fasciolopsis buski)

Food safety sampling scheme (SH and market stools)

			(n)	15/Mar-15/Apr 2014	15/Jun-15/Jul 2014	15/Sep-15/Oct 2014	01/Dec-30/Dec 2014
				4/Apr-23/Jun	**16/Jul-4/Sep**	**2/Oct- 13/Nov**	**5/Dec- 15/Jan**
Hung Yen	Van Giang	C 1	23	69 (65)	69 (59)	69 (59)	69
		C 2	23				
		C 3	23				
	Khoai Chau	C 1	23	58 (45)	58 (56)	58 (58)	58
		C 2	23				
		C 3	12				
	Tien Lu	C 1	23	58 (50)	58 (49)	58 (44)	58 (33..)
		C 2	23				
		C 3	12				
Nghe An	Dien Chau	C 1	23	58 (49)	58 (51)	58 (50)	58
		C 2	23				
		C 3	12				
	Hung Nguyen	C 1	23	58 (50)	58 (51)	58 (55)	58 (58)
		C 2	23				
		C 3	12				
	Do Luong	C 1	23	58 (51)	58 (57)	58 (50)	58
		C 2	23				
		C 3	12				
Total				**359 (310)**	**359 (323)**	**359 (316)**	**359**

Biological hazards: Salmonella, E-coli, coliforms, Strep. suis

INTERVENTION - Best bets

Evidence driven based on assessment and available literature

Consideration for the selection process

- Defining the targeted parameter

  (e.g. reduced salmonella contamination, endoparasites, weight gain …)

- Is the expected **effect measurable** (more difficult for producer interventions or interventions along the entire chain)

- How we can **monitor the implementation** of the intervention

- **Literature** screening for potential interventions, including RA, **successes and failures**

- Projected **investment costs** for an intervention

- Expected **compliance** of actors & feasibility of intervention (pro & cons)

Best bets - Selection process cont.

- Is the expected effect **focusing on a specific actor** (e.g. producer) **or** across-actor along the **entire chain** (e.g. reduced health risk of consumer)
- Externalities: **policy environment**
- **LIFSAP GAHP experiences** (29 criteria !), some unpractical e.g.
  - Separate from residential areas
  - Only same age classes
  - Quarantine

  Review & reduce to 5-10 most feasible based on producer feedback
- Potential for **scaling out**
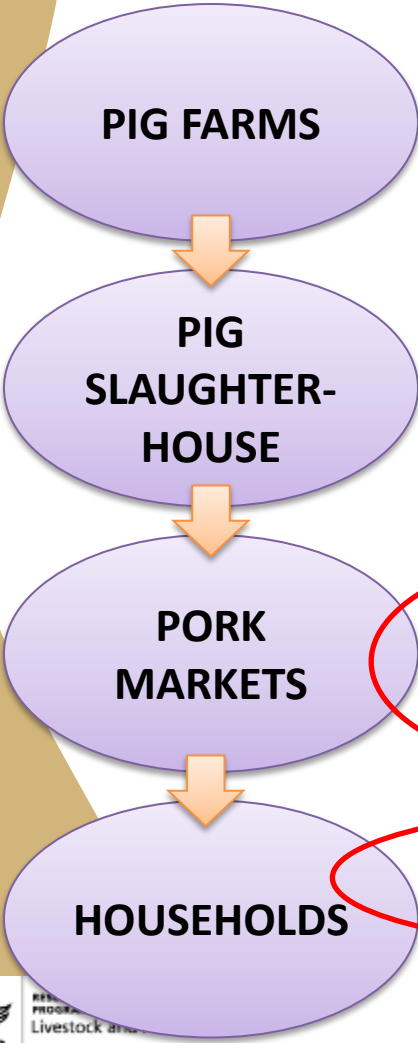
Validation of selected best bets

- SD model : ex-ante assessment of effects of bets bet
- Wide stakeholder consultations, including government
- Feedback of targeted actors

Disease Risks and Food Safety

Addresses	Actors/Stakeholders	Bets

Addresses

- PIG FARMS
- PIG SLAUGHTER-HOUSE
- PORK MARKETS
- HOUSEHOLDS

Actors/Stakeholders

| HH WITH PIGS | LOCAL VET |
| DRUG SUPPLIER | FEED/BREED SUPPLIER |

| LOCAL VET | WORKERS |
| TRADER/BUTCHER | SLAUGHTERHOUSE OWNER |

| TRADER/RETAILER | LOCAL VET |
| MARKET MANAGER | HEALTH/TRADE SECTOR |

| CONSUMERS | LOCAL VET |
| UNIONS/GROUPS | HEALTH SECTOR |

1. Information – Knowledge targeting behavior change

Bets

2. Biosecurity
3. Waste and farm management

4. SH hygiene practice + C&D

5. Shop hygiene practice + C&D

6. HH: handling, preparation, habits

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Source: Sinh & Unger, 2014

PIG SLAUGHTER-HOUSE

Source: Sinh & Unger, 2014

PORK MARKETS

Consumer preference for "dry - looking" pork (Sinh, 2013)

Source: Sinh & Unger, 2014

Outlook 2015-2018 …

Pig risk:

Best bet implementation and evaluation

Dissemination & communication

General VC activities (based on recent stakeholder consultations):

Feed   Capacity building on feeding of different breeds & types

        Evaluation of non-traditional feeds e.g. by-products of agro-industries

Breed   Review of breeding and breeding management

        Improving of quality of breeding boars and AI services

        Conversation of local breed

Explore options for a traceability system

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