

Manure management options and opportunities

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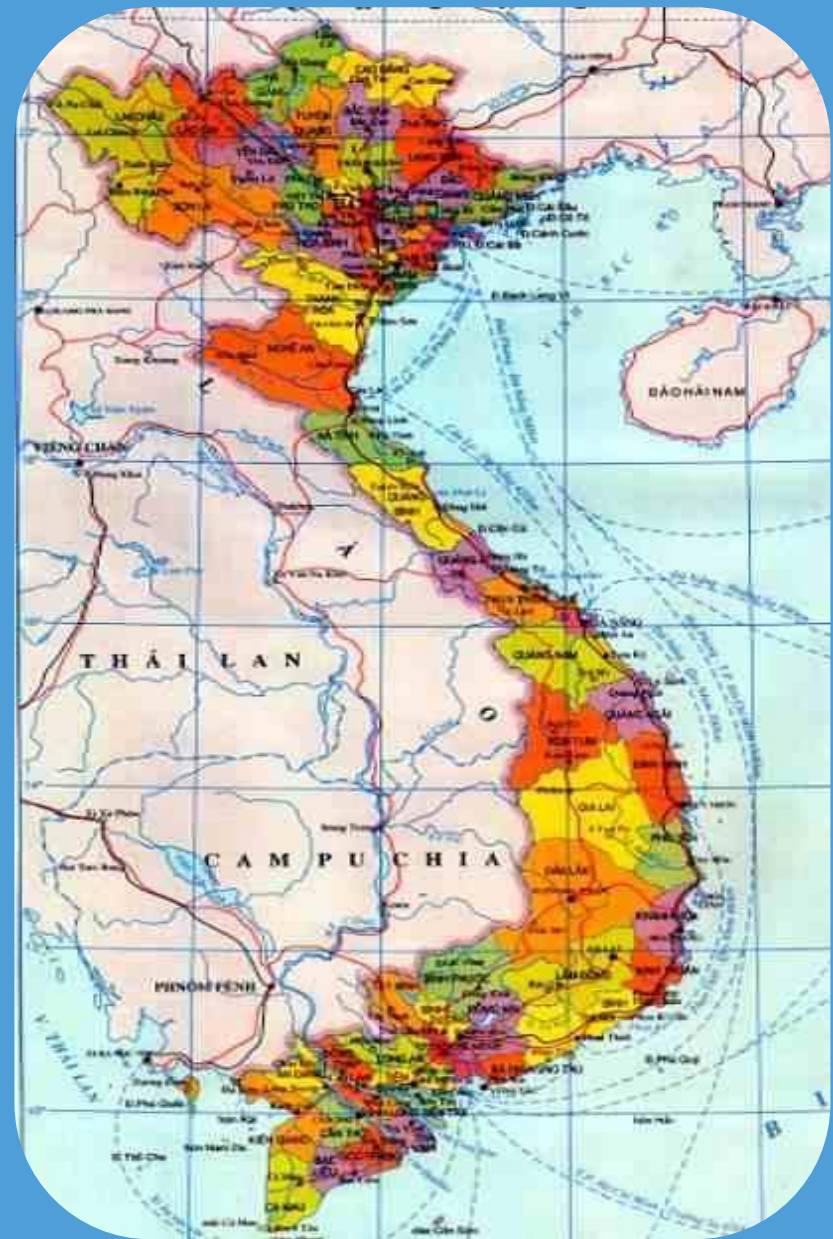
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Current situation in Southeast Asia

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Example case of Vietnam



Livestock production during period 2000-2010

Animal (Mio. heads)	Year							Growth rate (%)
	2000	2005	2006	2007	2008	2009	2010	
Buffalo	2.9	2.92	2.92	2.99	2.90	2.89	2.91	0.3
Cow	4.13	5.54	6.51	6.72	6.34	6.1	5.91	43.1
Pig	20.19	27.43	26.9	26.5	26.7	27.63	27.73	35.6
Poultry	198.1	280.1	277.2	225.9	247.2	280.2	296.3	49.5
Goat, Sheep	0.54	1.31	1.53	1.78	1.48	1.38	1.29	138.8

Source :Viet Nam animal husbandry in 2000-2010, Department of Livestock production



Number of animal farms in Vietnam (2008)

	Pig	Poultry	Cow	Buffalo	Goat	Total
Whole country	7,475	2,837	6,405	247	757	17,721
Northern	3,069	1,274	1,574	222	201	6,313
Southern	4,406	1,563	4,858	25	556	11,408

8.5 million
smallholder
farms



Source : Department of Livestock production Vietnam; 2008, 2011



Current manure waste in Vietnam (2008)

Animals	Total heads (million)	Ave. Manure waste kg/ head/ day	Total (Milion tonnes/ Year)
Cow	6.33	10	23.13
Buffalo	2.89	15	15.86
Pig	26.70	2	19.49
Poultry	247.32	0.2	18.05
Goat	1.34	1.5	0.73
Sheep	0.08	1.5	0.04
	<i>Total</i>		<i>77.3</i>



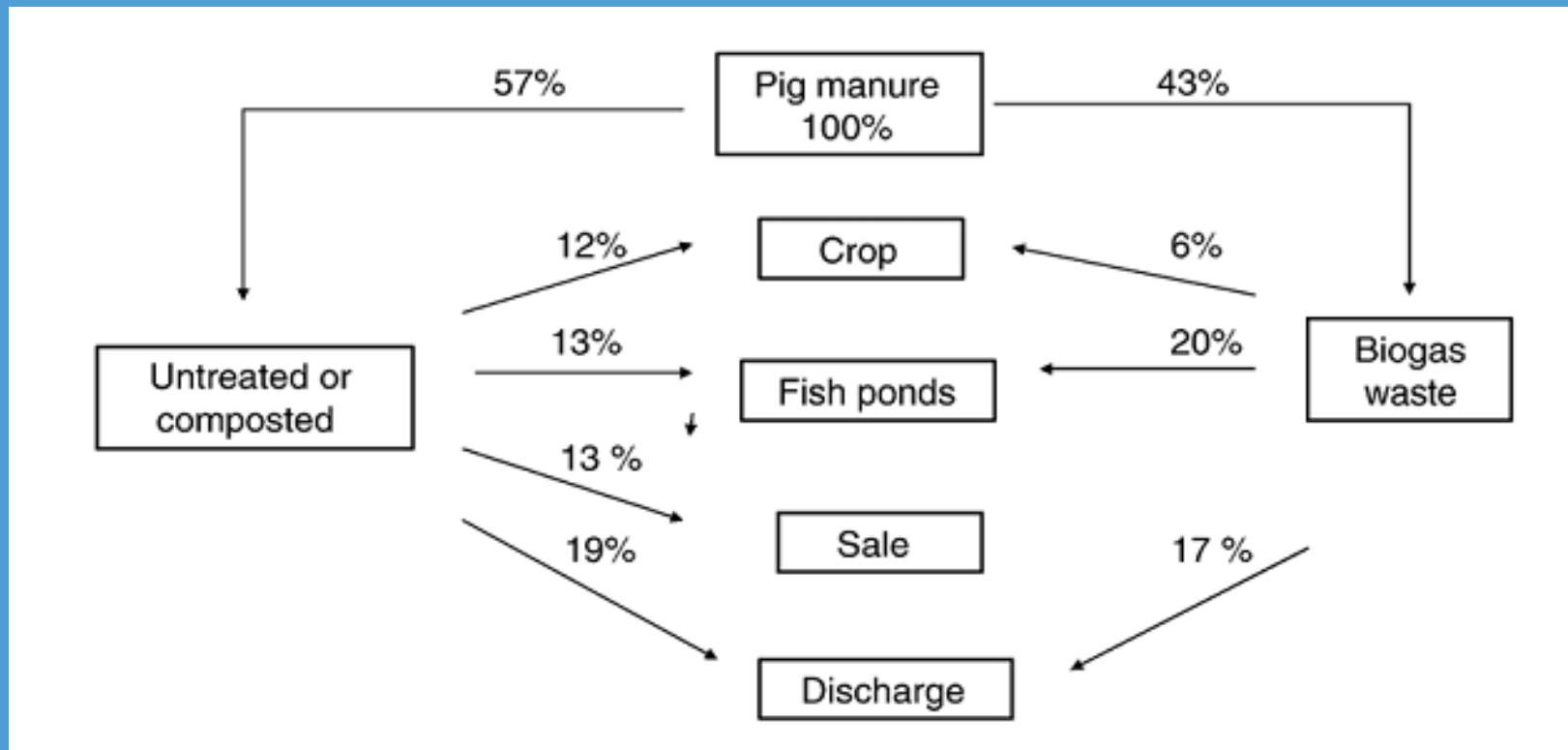
Manure management

- *Chicken wastes* : biogas plants (gas for family cooking, warming small chicks); feeding fish.
- *Cattle solid wastes* :
 - ✓ Fertilized elephant grass; bonsai; coffee, pepper, or fruit plants;
 - ✓ Land-spreading for dehydration; manure is dried, then mixed with lime, rice straw, rice husk ash, or/and coconut husk dust.
- *Pig manure: widely used for fertilizer*
 - ✓ No treatment with direct discharge to fields, fishpond, river (e.g., lakes, streams, river).
 - ✓ Composting with rice hull, coconut hull...then sell as organic fertilizer.



- ✓ Storage without treatment with ultimate disposal on crops, in fish ponds, for sale, or in discharge.
- ✓ Biogas production with ultimate disposal on crops, in fish ponds, for sale, or in discharge

Manure Use in Surveyed Farm Areas in Northern Vietnam



Liquid management

Various waste treatments applied by livestock farms in the study site (%)

Waste treatment	Solid waste	Liquid waste
Biogas	21	25
Fresh manure storage	26	0
Composting	10	0
Discharge to fish ponds	8	12
Discharge to land/stream	19	60
Selling fresh manure	7	0
Give away	2	0
Others	7	3



Slaughterhouse wastewater

- 12,984 slaughter enterprises operating in the 64 cities/provinces of Vietnam;
- Wastewater from livestock slaughtering operations is mostly discharged untreated into streams, rivers, or vegetable fields;
- 100% pig slaughtering; 67% of cattle slaughtering and 27% of poultry slaughtering operations have veterinary control;
- 90% of bases slaughtering cattle on the floor, 10% of one's slaughtering cattle on the pedestal.
- 45% of slaughtering units implement antidotal hygiene before and after slaughtering, with 55% implementing regular decontamination



Summarized results of biogas users 2010-2011

2,000,000 units
of biogas digester
in Vietnam



■ *Biogas users*

- ✓ Income/household: 145.6 million VND vs 119.1 million VND/year;
- ✓ 99.3% received subsidy from the biogas program;
- ✓ 69.3% of households received technical support, or monitoring and 71.9% received both support
- ✓ 92,7% of households received training and/or guides.















■ *Biogas plants and its equipment*

- ✓ 91.7% of households estimate the plant size and biogas production as appropriate and efficient;
- ✓ Biogas is Mainly used for Cooking: 1.65 cooker/plant, 3.5 hours of lighting/daily;
- ✓ 1.8 lamps/plant and lighting time is 3.19 hours/daily.

■ *Biogas plants by-product*

- ✓ 38.9% of household make use of slurry
- ✓ 92.7% household used slurry as fertilizer for rice, maize, vegetables, cereals and industrial crops and they obtain greater yields.



Conclusion

■ *Biogas plant*

- ✓ *Advantage : less environmental pollution; biogas effluent producing no offensive odour, not attracting flies, used for irrigation/fish production; for family cooking, warming chicks, boiling water for nursery piglets, or for liquor production*
- ✓ *Disadvantage: it requires large areas; all the wastes produced from big farms or the gas from bigger plants might not be fully utilisable; it cannot be practised for farms that have very small numbers of animals; flooding happens, biogas plants cannot be maintained and the almost no effect on the of nitrogen and phosphorus.*



■ *Possibilities to deal with liquid wastes*

- ✓ Awareness should be raised among farmers about the value of pig manure and its potential environmental impacts; the development of pig manure markets could be promoted; government should enforce legislation on waste management to force farmers to take responsible for the generated animal waste.
- ✓ Limit water volume used in house cleaning by collection solid manure before house washing and apply air cooling system to minimise the water volume used to cool animals; collect liquid wastes: for farms having land, wastewater or biogas effluent should be biologically treated, or used for fish.



Thank you
For your
Attention

