

Recoupling Livestock and crop farming systems at territorial scale in Vietnam : Practices, innovations and challenges

Jean-Daniel Cesaro (Selmet, Cirad)
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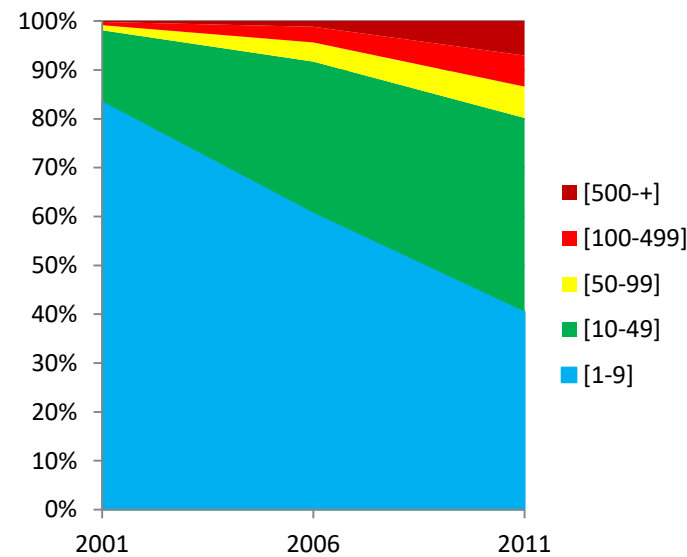
Parallel symposia : Livestock in living territories:
Stories, approaches and concepts

The pig sector transition in Vietnam

Le Vietnam dans l'ASEAN

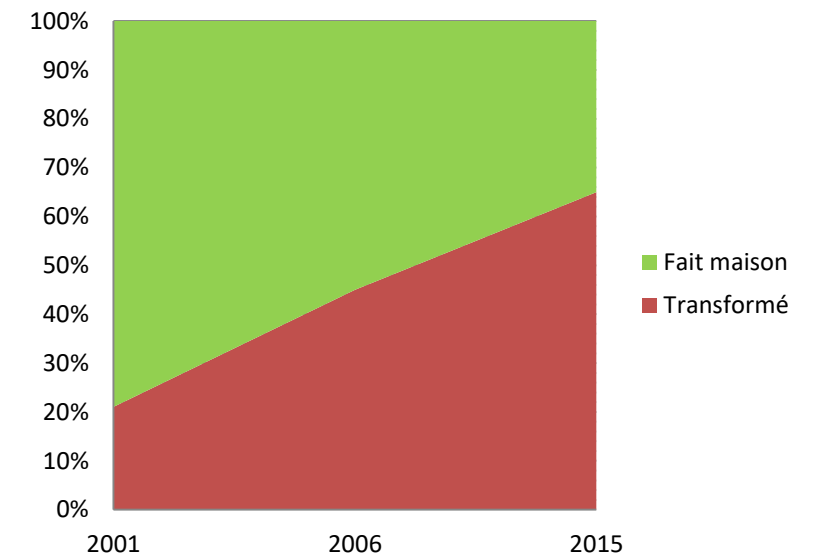


Restructuration du cheptel porcin par niveau de production entre 2001 et 2011



En 2011, 10% des exploitations contribuent à 50% de la production

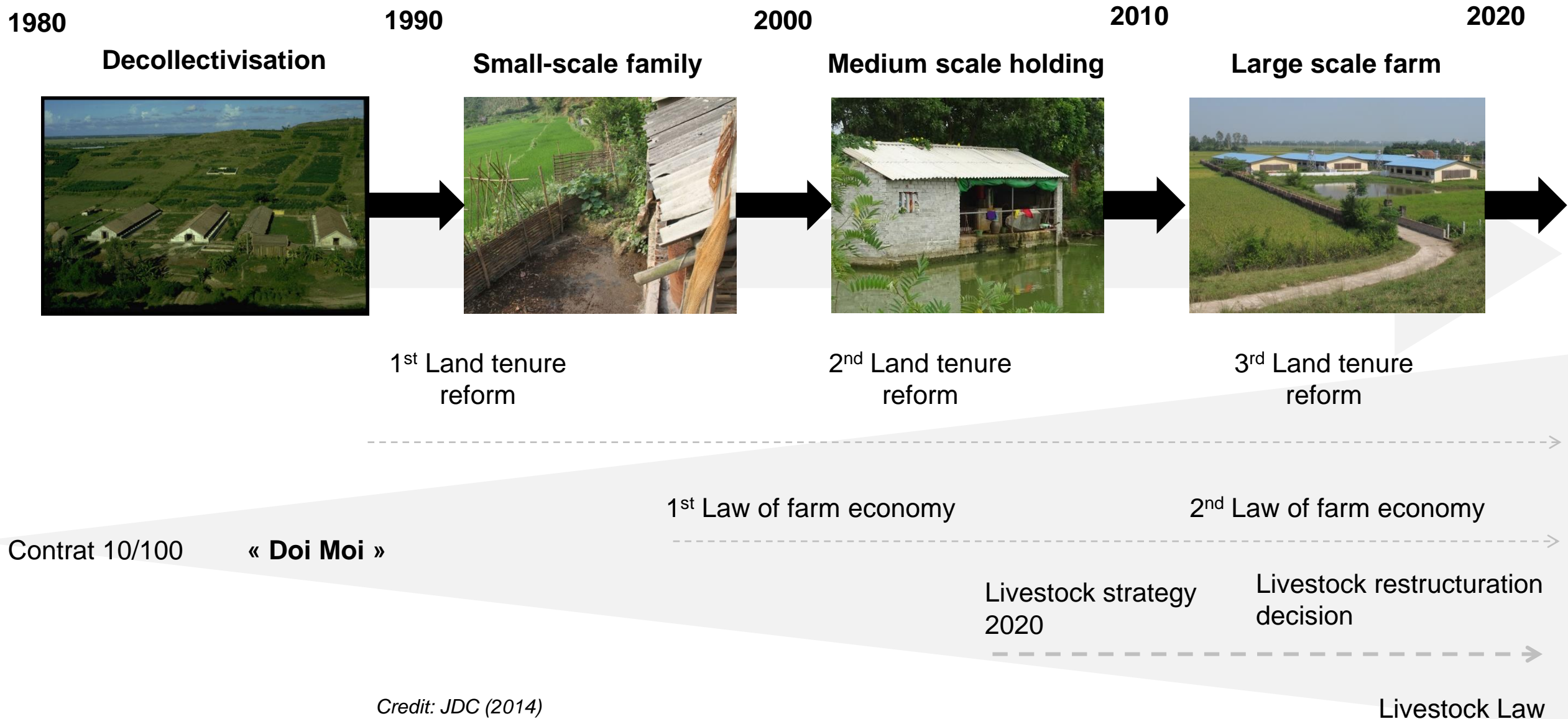
Origine de l'alimentation animale au Vietnam entre 2001 et 2015



**Importation de maïs et de soja
2001 : 1 million de tonnes
2014 : 10 millions de tonnes**

Source : calculs personnels (Cesaro, 2016) / RAR (1994/2001/2006/2011)

Vietnam Public Policy in the Pig Sector : the culture of model



“Losing the Links Between Livestock and Land”

POLICY FORUM

AGRICULTURE

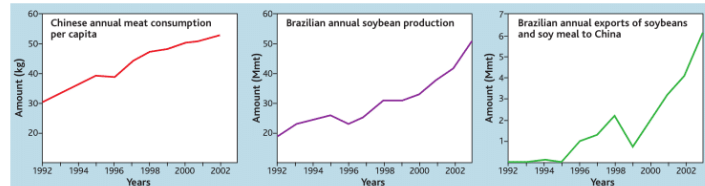
Losing the Links Between Livestock and Land

Rosamond Naylor,^{1,2*} Henning Steinfeld,⁴ Walter Falcon,² James Galloway,⁵ Vaclav Smil,⁶ Eric Bradford,⁷ Jackie Alder,⁸ Harold Mooney³

The industrial livestock sector has become footloose—no longer tied to a local land base for feed inputs or to supply animal power or manure for crop production. Spatially clustered within and among countries, this sector is expected to meet most of the income-driven doubling in meat demand forecast for developing countries by 2030 (1). Large-scale, intensive operations, in which animals are raised in confinement, already account for three-

systems—often separated in space from each other and from the consumer base—remain largely unaccounted for in the growth process. Industrializing and globalizing livestock systems have hinged on declining real prices for feed grains; advances that have improved feed-to-meat conversion efficiencies, animal health, and reproduction rates; relatively cheap transportation costs; and trade liberalization. The most dramatic shift

United States for several decades. Industrial poultry and pork operations are largely uniform worldwide, which facilitates a rapid transfer of breeding and feeding innovations. Larger firms typically control production from animal reproduction to the final product, mainly to minimize economic and pathogen risks. As these firms increasingly supply major retail chains, corporate attention is directed toward food safety and the production of homogeneous (yet diverse), high-quality products. In addition to scale, industrial livestock operations have become concentrated geographically in areas where input costs are relatively low; infrastructure and access to markets are well developed; and in many cases, environmental regulations are lenient (6). The most striking feature of this geographic concentration is the delinking of livestock from the supporting natural



International linkages in supply and demand of livestock products, 1992–2003 (3). Mmt, millions of metric tons.

quarters of the world's poultry supply, 40% of its pork, and over two-thirds of all eggs (2). International trade in meat is also expanding; during the past 15 years, annual trade volumes have increased by 5.5% for pork and 8% for poultry (3). Livestock remains the world's largest user of land, but its use has shifted steadily from grazing to the consumption of feed crops. Unfortunately, environmental and resource costs of feed-crop and industrial-livestock

has been toward the production of monogastric animals, such as chickens and hogs, which use concentrated feeds more efficiently than cattle (or sheep) and which have short life cycles that accelerate genetic improvements. The average time needed to produce a broiler in the United States was cut from 72 days in 1960 to 48 days in 1995, and the slaughter weight rose from 1.8 to 2.2 kg (4). Meanwhile, feed conversion ratios (FCR, kg feed per kg meat) were reduced by 15% for broilers and over 30% for eggs (5). Annual growth in hog and poultry production in developing countries was twice the world average in the 1990s (2). By 2001, three countries—China, Thailand, and Vietnam—accounted for more than half the hogs and one-third the chickens produced worldwide (1). Brazil is also a major producer and is expected to become the world's leading meat exporter.

Virtually all of the growth in livestock production is occurring in industrial systems—a trend that has been evident in the

resource base. Feed is sourced on a least-cost basis from international markets, and the composition of feed is moving up the chain from agricultural by-products to grain, oil-meal, and fish-meal products that have higher nutritional and commercial value. Although FCRs for chickens and hogs on an edible weight basis are roughly one-fifth and one-third, respectively, that of cattle (whose diets include rangeland forage, crop residues, and by-products) (7), monogastric diets are richer in cereal and legume feeds, which compete with food crops for land and water.

Future land needs for industrial livestock production are potentially great. For example, a balanced Chinese diet of the early 1990s containing 20 kg meat per capita per year was produced from an average land area of just over 1000 m²/capita, whereas a typical Western diet required up to four times that area (7). China's meat consumption, consisting mainly of pork, is increasing rapidly with income growth and

The « impacts » of livestock revolution

- Earth meat balance going to East
- Earth Grain balance going to West
- Global value chains having local impacts

- Industrialization of animal nutrition
- Speciliaztion of holdings

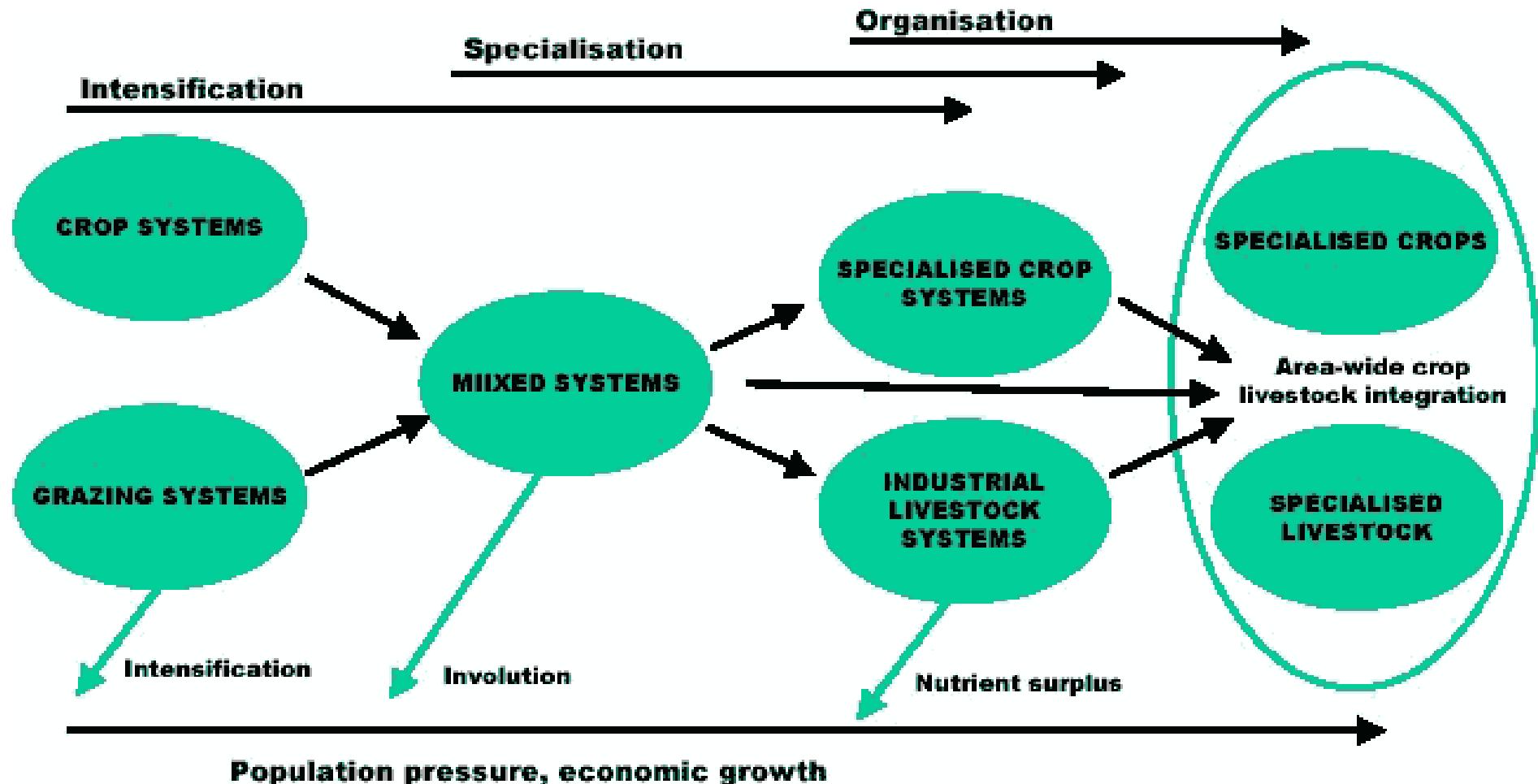
Livestock in geographical transition

- Relocation of livestock production
- Regional Clusterisation at global/local scale

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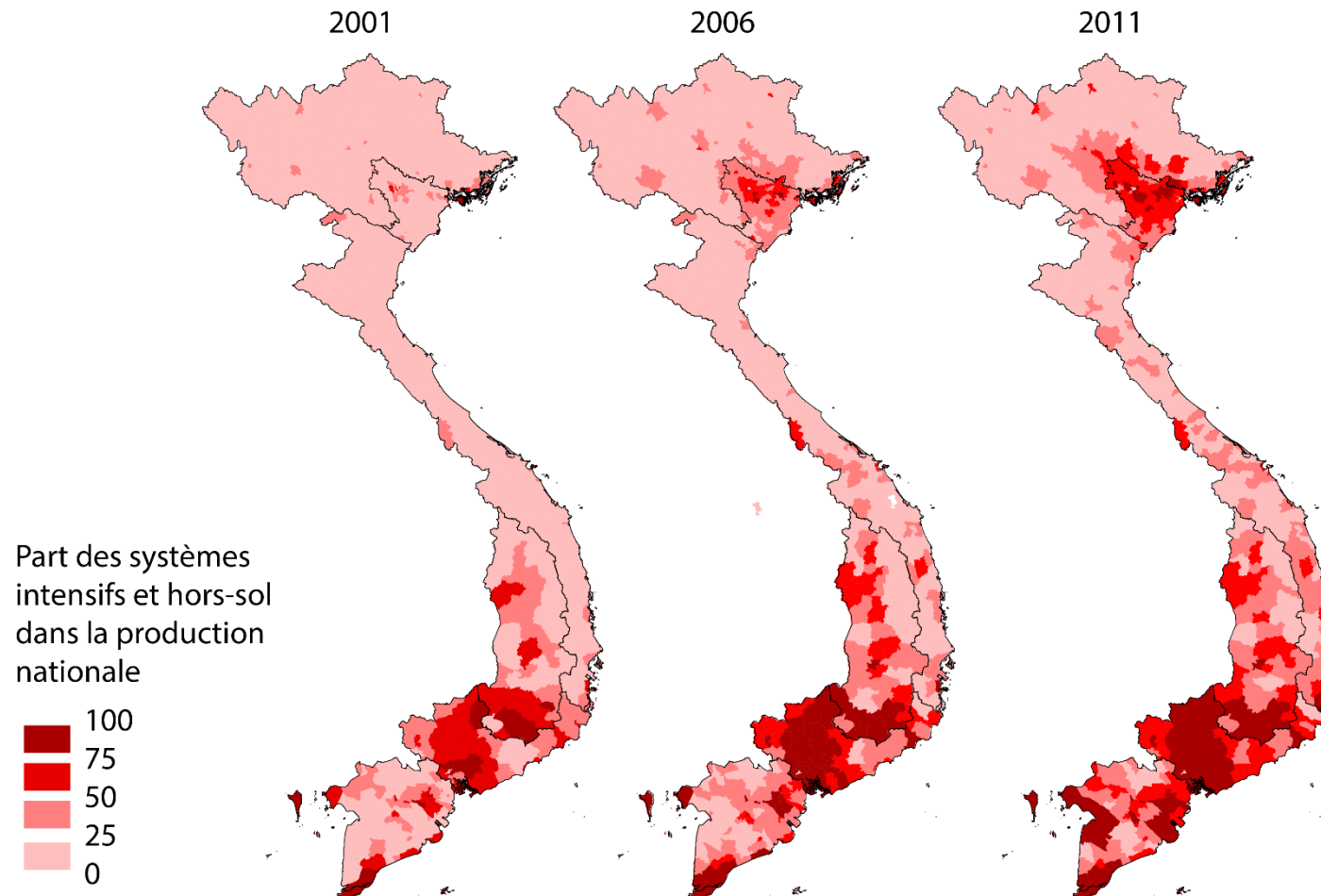
Promoting « Area-wide integration of crop and livestock » (AWI)



Livestock systems development pathways
(Steinfeld, de Haan & Blackburn, 1997)

Geography of specialized districts in intensive livestock systems

Spreading and regionalization



Source : RAR (2001, 2006, 2011)

The factors

Regional economic development (GDP / capita)

Distance to consumer markets (downstream)

Distance to inputs (feed industry)

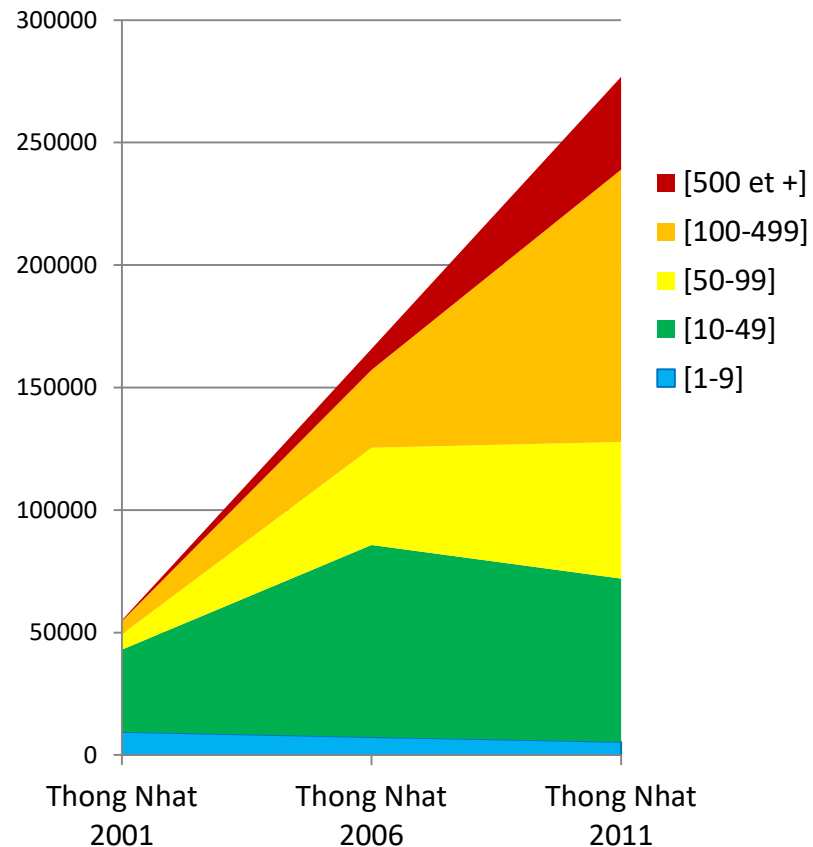
The price of land and the sustainability of its availability (function of distance to markets)

Thong Nhat (Southern Vietnam) An : Exemple of a local AWI ?

Spatial management

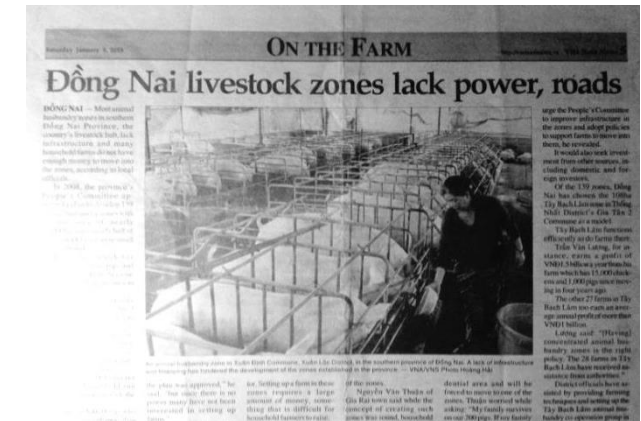
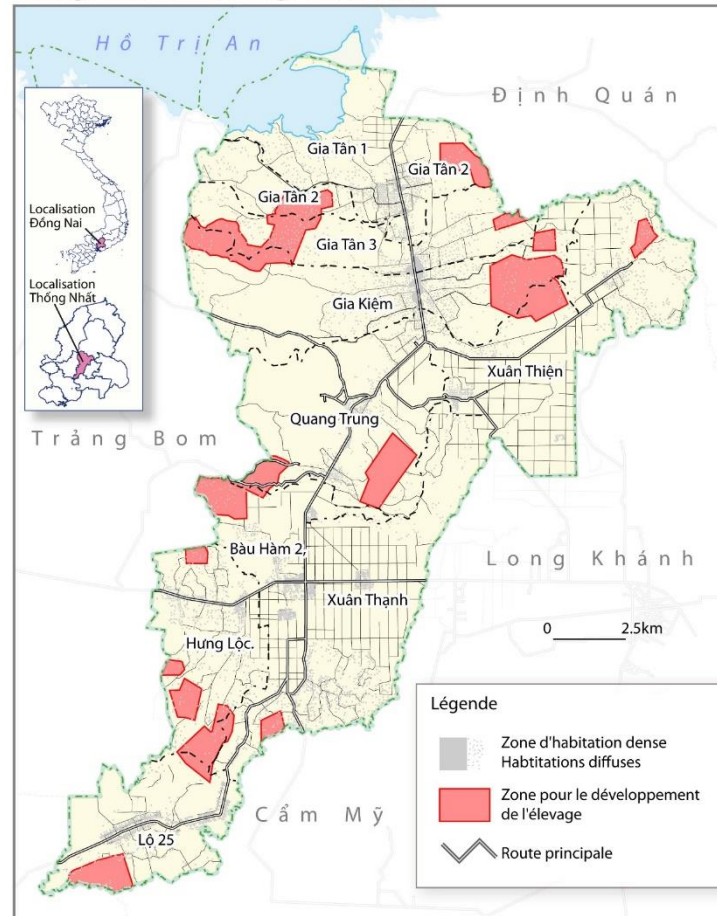
A world bank and VNPR initiative

Fast increase of production



Source : RAR (2001, 2006, 2011)

Thống Nhất District, Đồng Nai Province



Source : 5 janvier 2013

Save the Tri An Biospher Reserve Lake ?



Source : 2013

Planning



Feed



Medium scale



Large scale



Inside a Livestock development zone

Contract scale



Feed industry



Market



Export



Local overload



Unefficient techs



Bags of manure



Where are the bags going? : export value cahins and quantification of flows

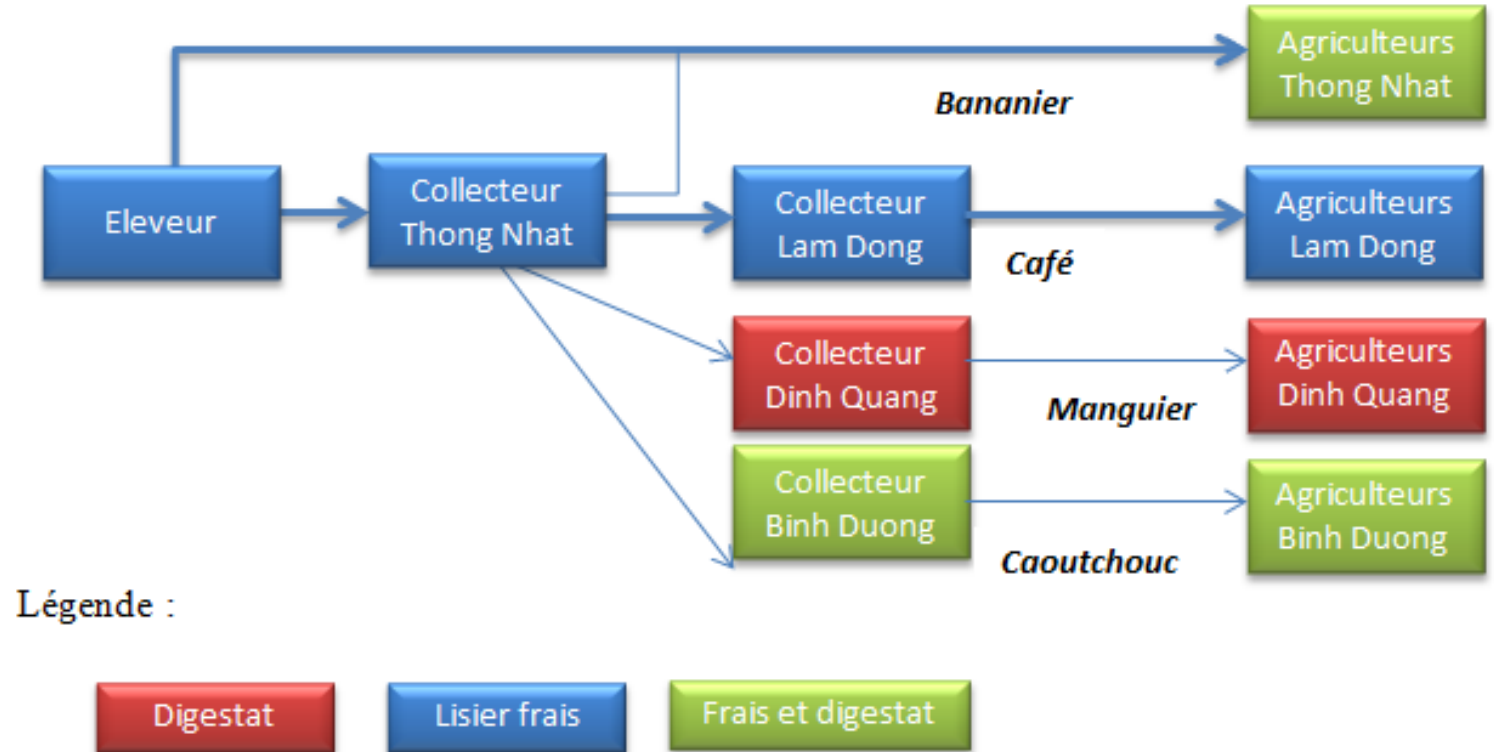
Stockage



Extraction



Export



Quantification en cours mais estimation de 30% des MO qui partent dans ces filières : 8 millions de sacs / an

Modèle d'intégration agriculture-élevage à l'échelle d'un village



Le plan d'aménagement

Vendeur de biogaz



VAC



Horticulture



Fermes + manioc



Depuis la digue



Vendeur d'aliment



Atelier extérieur village



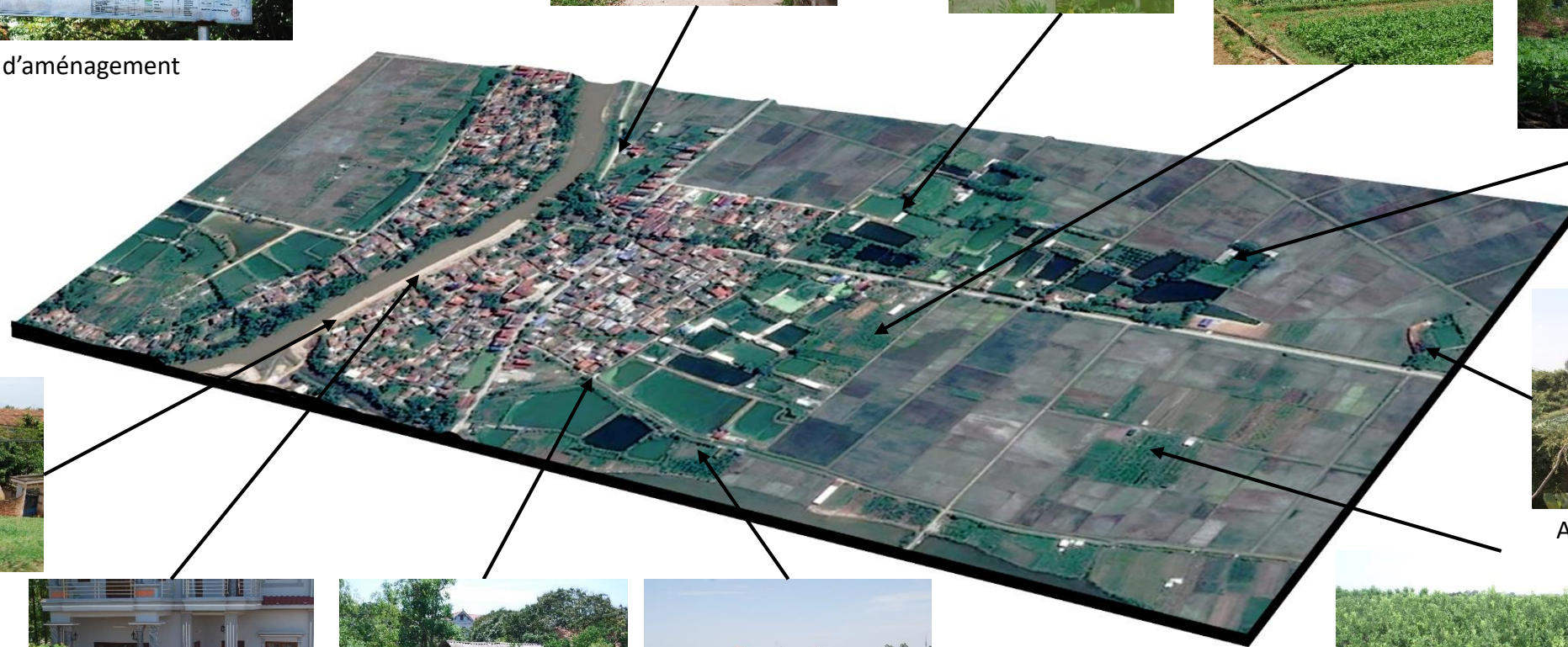
Lagunage et diversité



Arboriculture (mandarine)



Arboriculture (mandarine)



Intengrated & Intensive Pig systems Development in the Red River Delta



*Construction d'un système – élevage porcin + aquaculture – (VAC)
dans la province de Bắc Giang (septembre 2016)*

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Stakeholders' Perceptions of Pig Effluent Management in Thai Binh Province

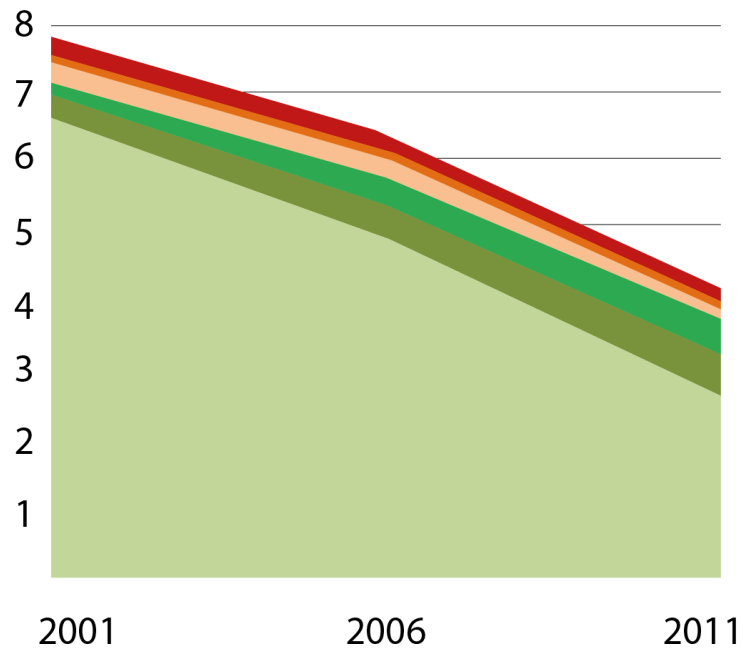
D. Pillot, J.F. Le Coq, Nguyen Thi Hoa Ly, V. Porphyre

In Thai Binh province, intensification of pig farming is accelerating, due to the policy of liberalization and an increase in living standards, which also increases the amount of effluents produced. Analysis of the stakeholders' perception with regard to the management of livestock waste shows that all the stakeholders in the area are very concerned about the impact of poor waste management. In particular, they are worried that their quality of life, health, and economic activity might be jeopardized. To solve these problems, they would like to see various solutions implemented: moderated use of effluents, effluent exchanges between farms with surplus waste and farms lacking waste, implementation of storage and treatment techniques, training for stakeholders, removal of livestock farms from inhabited areas and inspections of these farms. Institutional analysis has made it possible to determine some key courses of action to solve these problems: definition of the precise role of each stakeholder, co-ordination and organization between stakeholders, implementation of directives, legislation and regulations. The dialogue between stakeholders initiated by the results of the survey has led to the beginning of an awareness of the stakes and the limitations of currently implemented solutions. Indeed, although the most popular solutions among stakeholders remain the implementation of biogas, moving farms and implementing regulations, they could nevertheless lead to negative risks, in particular impacting on the quality of drinking water and on the social fabric of the province.

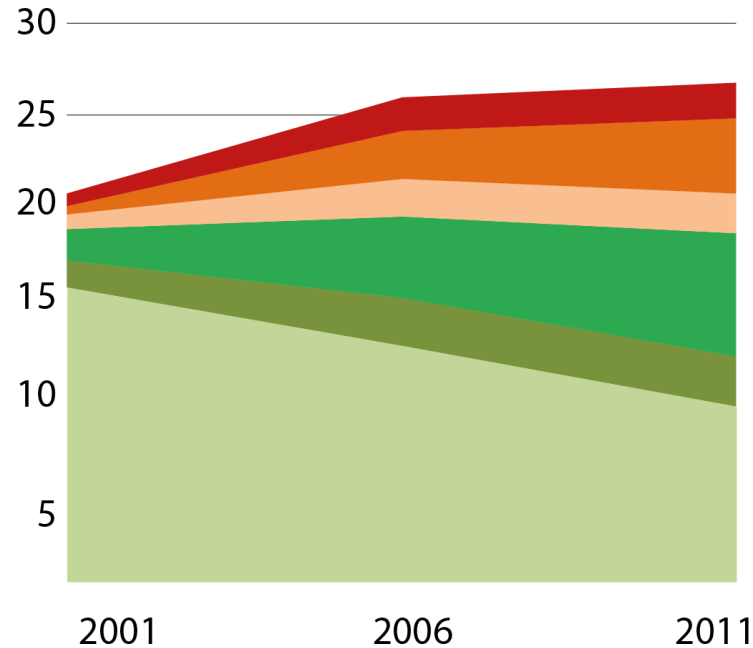
See Prophyre (2006) & DP PRISE

The dynamics of pig farming systems: towards a climax of diversity

Evolution du nombre d'exploitations porcines par catégories entre 2001 et 2011



Evolution de la production porcine par catégories entre 2001 et 2011



Elevage porcin et au moins une culture annuelle

- 1 Faible intensité
- 2 Moyenne intensité
- 3 Forte intensité



Elevage porcin avec au moins une culture pérenne, forestière ou aquacole

- 4 Faible intensité
- 5 Forte intensité



Elevage porcin sans terre

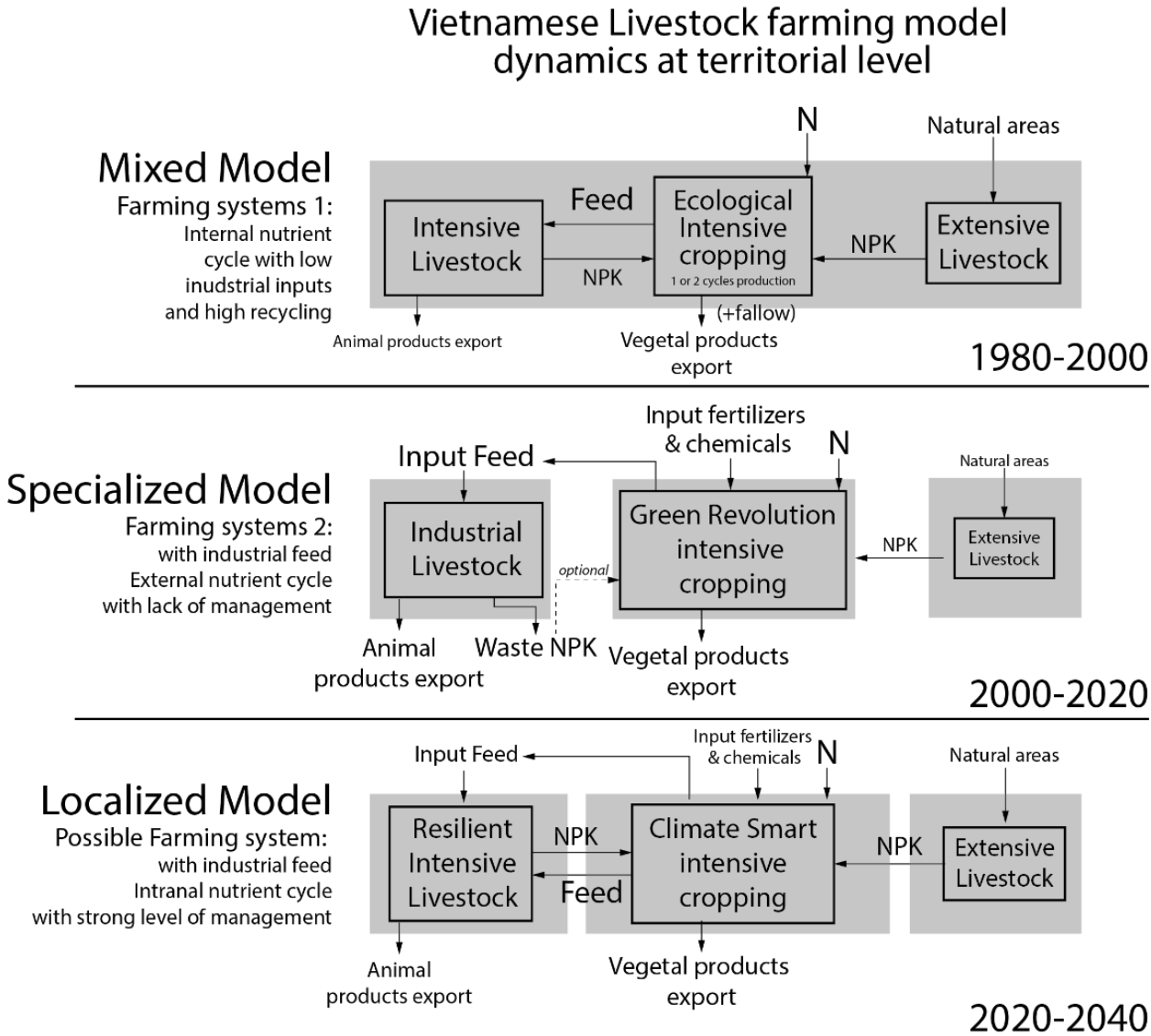
- 6 Forte intensité



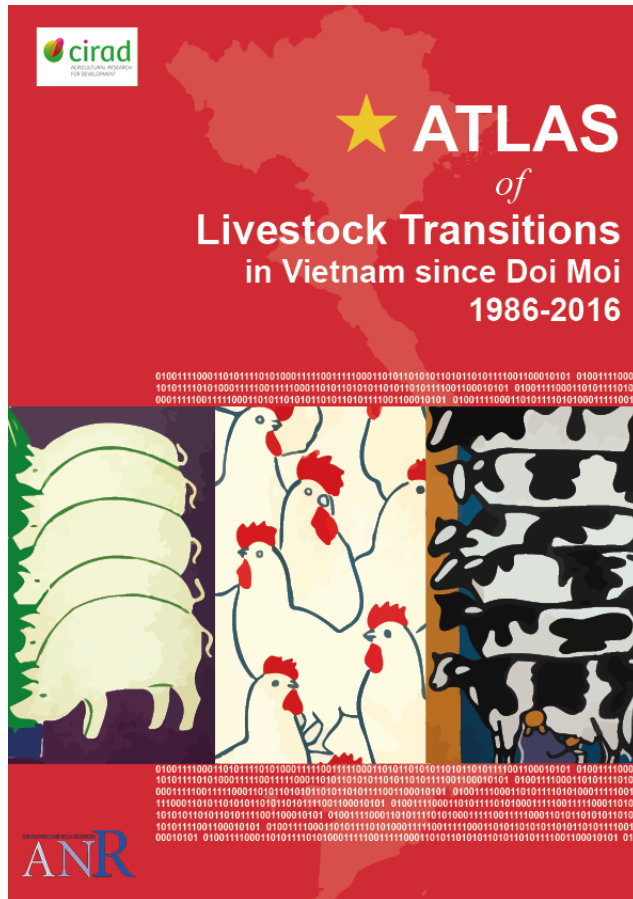
Source : RAR (1994/2001/2006/2011)

Cesaro, Propyre et Duteurtre, REMVT, à paraître (2018)

Conclusion : A need for an intensive localized model (from feed to manure)



Un atlas pour assurer la visibilité des questions d'élevage dans le développement



Proposition sur :

- l'intégration agriculture-élevage à différentes échelles géographiques
- la promotion de filière inclusive pour ne pas marginaliser la petite agriculture familiale encore majoritaire
- l'analyse prospective du secteur de l'élevage prenant en compte toutes les dimensions de la durabilité (pas seulement économique)