Conference "Rethinking Asian Capitalism and Society in the 21st Century"

Ho Chi Minh City, 7-8 November 2019

Milk mega farms and the new agrarian capitalism: the multiple dimensions of the current socio-technical transition in Vietnam

G. Duteurtre*[(1)], P. Bonnet[(2)], JD Cesaro[(1)], N. Hostiou[(3)],
Nguyen Mai Huong***[(4)]**, Pham Duy Khanh[(4)], M. Pannier[(5)]

** Will present the communication.*

[(1)] : Cirad, UMR Selmet (Cirad, Inra, Mtp Supagro, Univ. Montpellier), France
[(2)] : Cirad, Département ES, Montpellier, France
[(3)] Inra, UMR Territoires (Inra, Irstea, Inapg), Clermont-Ferrand, France
[(4)] Rudec-Ipsard, Hanoi, Vietnam
[(5)] Ird, UMR Patrimoines Locaux et Gouvernance (Ird-Mus. d'Hist. Nat), France
Contact : duteurtre@cirad.fr

Abstract:

In the last 30 years, the Vietnamese dairy sector has gone through a deep transformation. We use the concept of "sociotechnical transition" to capture the multiple dimensions of these changes that reflect the renovation of Asian capitalism and society. Our research comprises a multi-disciplinary long term field study conducted in Hanoi Province, as well as an analysis of national regulations and secondary databases. Based on that, we identify different sociotechnical regimes that govern the dairy sector for a given period. Those regimes are defined as coherent sets of practices, techniques and social rules. From the Doi Moi reforms up to the mid-2000s, the development of Vietnamese dairy production was dominated by the complementarity between small peasant farms, private milk processors and public sector services. We propose to qualify this timeframe as a "peasant" sociotechnical regime. In the late 2000s, however, this regime ran up against questions concerning the underlying food model, mainly due to its dependence on imported milk powder. Following the 2008 melamine health crisis linked to imports from China, Vietnam entered into a "corporate" dairy development regime which gives more space to agro-industries and capitalist logics. This change of direction profoundly changed the outcome of the "transition". The emergence of mega farms holding several thousand cows reflects this change of direction pushed to the extreme. Mega farms reflect the importance of financial capital and high technologies in the transformation of Vietnam's agricultural economy. The new socio-technical regime also relies on a social construction of new food models concerned with "health safety". But the rise of this "corporate" regime is constraint by the fact that the State, who formally owns the land, tends to preserve land-use rights for smallholder farmers. This situation results in a coexistence of the 2 sociotechnical regimes, rather than in the replacement of one by the other.

Keywords: *socio-technical transition, agrarian capitalism, dairy sector, value chain, Vietnam*

Codes JEL:
A14 - Sociology of Economics
O17 - Formal and Informal Sectors; Shadow Economy; Institutional Arrangements
Z13 - Social Norms and Social Capital; Social Networks

Titre (French) : Les méga-fermes laitières comme nouvelle forme du capitalisme agraire au Vietnam : Une approche en termes de transition socio-technique

Résumé

Depuis 30 ans, le secteur laitier vietnamien a connu de profondes transformations. Nous mobilisons le concept de transition sociotechnique pour analyser les multiples dimensions de ces changements qui témoigne des mutations du capitalisme et des sociétés asiatiques. Notre recherche s'appuie sur une étude de terrain de longue durée, complétée par l'analyse de documents réglementaires et de données secondaires nationales. Sur cette base, nous identifions les cohérences dans les évolutions des pratiques, des techniques et des règles sociales, afin de repérer des « régimes sociotechniques ». Depuis les réformes du Doi Moi jusqu'au milieu des années 2000, le développement de la production laitière vietnamienne a été marqué par un régime que nous proposons de qualifier de « paysan ». Ce régime s'est construit sur la base d'une complémentarité entre les petites fermes paysannes, les firmes privées et les services de l'Etat. Or, à partir de la fin des années 2000, ce régime s'est heurté à une remise en cause du modèle alimentaire sous-jacent, du fait notamment de sa dépendance aux importations de poudre de lait. Suite à la crise sanitaire de la mélamine, liée aux importations venant de Chine, le pays est entré en 2008 dans un régime de développement laitier de type « agro-industriel ». Ce changement d'orientation a profondément modifié la forme de la « transition ». L'apparition des méga-fermes de plusieurs milliers de vaches est significative de ce changement d'orientation poussé à son paroxysme. L'émergence des méga-fermes rend compte de l'importance du capital financier et des systèmes à haute technologie dans la transformation de l'économie agricole de ce pays. Ce régime s'appuie aussi sur une construction sociale de nouveaux modèles alimentaires soucieux de la « sécurité sanitaire ». Mais l'essor de ce régime agro-industriel est limité par la mainmise de l'Etat sur la terre, qui tend à préserver l'accès des familles rurales au capital foncier. Cette situation aboutit à une coexistence des deux régimes sociotechniques identifiés, plutôt qu'au remplacement de l'un par l'autre.

***Mots clés**: Transition socio-technique, capitalisme agraire, secteur laitier, chaine de valeur, Vietnam*

Introduction

For the past thirty years, Vietnam has been engaged in a transition towards a "socialist-oriented market economy". This development is in line with the policies of "Renovation" (*Đổi Mới*) launched in 1986 by the Vietnamese Communist Party (VCP). What have been the impacts of this "post-socialist transition" (Fortier and Tran Thi Thu Trang, 2013) on the diversity of agricultural production forms? How did the new forms of capitalist agriculture emerge? Is the model of "large-scale rice fields"[1] initiated in the beginning of the 2010 a sign of a new priority given to giant industrial production structures (VNA, 2017)?

We propose to approach the transition underway in Vietnamese agriculture through a case study of the dairy sector. This sector is interesting due to the rapid change it has undergone. Between 1990 and 2017, Vietnamese dairy production increased by a factor of 15, representing the highest rate of growth of a dairy sector in this region of the world (Table I). We will focus particularly on the emergence of dairy mega farms, an emblematic form of the new agrarian capitalism in Southeast Asia (Ly Thao, 2015).

The first section presents the framework and method used. The transformations that occurred in the dairy sector from the 1980s up to 2008 are presented in the second section. During this period, one marked by the *Đổi Mới* reforms, collective farming was gradually abandoned in favor of smallholder farming. The third section presents the changes that have been underway since 2008, which are placing an increasing emphasis on industrial dairy farming and agrobusiness. In the last section, we discuss the co-existence of the family farm and mega farm models.

1. Method

As in China, where a comparable change in direction was undertaken with the reforms initiated by Deng Xiao Ping beginning in 1978 (Zufferey, 2010), the reforms of the Vietnamese economic policies have resulted in major institutional, economic, social, environmental and cultural consequences. The economic "transition" has therefore to be considered together with demographic, dietary, technological and agricultural transitions, resulting in multiscale integrated changes (Lagrée, 2010).

Grasping the multiple dimensions of a transition requires a multidisciplinary, or even transdisciplinary, approach to change pathways. The framework of analysis offered by the multi-level perspective proposes to consider these pluridimensional changes as a "socio-technical transition" (Geels, 2004; Geels and Schot, 2007). This transdisciplinary framework of analysis is particularly suited to the consideration of long-term transitions in the agriculture sector and their impact on sustainable development (Darnhofer, 2015). The intent is "*not to consider the transition uniquely as a comparison between two situations separated by an interval of time, but to grasp what happens during the transition: the changeover*[2]" (de Terssac, 2014).

The multi-level perspective considers three components (or analytic "levels") that determine the change dynamic: the socio-technical regime, the innovation niches, and the socio-technical landscape. The socio-technical regime is defined as a coherent set of practices, techniques and social rules. At times, one may refer to a "dominant"

[1] Also called "large-scale models" (English) or "*mô hình cánh đồng mẫu lớn"* (Vietnamese)

[2] Translated by us from original citation in French : « (…)*ne pas considérer la transition uniquement comme une comparaison entre deux situations espacées dans le temps, mais de saisir ce qui se joue pendant la transition : l'état de passage* » (de Terssac, 2014).

regime to indicate the dominance of one type of regime at a given moment. Innovation niches are the loci of radical innovations from the dominant regime, and are found at the local level. These innovations can challenge the dominant regime. The socio-technical landscape determines the conditions outside the regime, such as overall demographic and environmental trends, policy directions, social values, etc. This landscape evolves under the influence of decisions or shocks, or in a gradual manner (Geels, 2004; Geels and Schot, 2007).

The multi-level perspective is used here as an open framework for the interpretation of change pathways. However, we also will try to identify the uncertain dimensions of changes that themselves depend on more contingent factors. Indeed, "*the notion of a trajectory does not imply that one should conceive of it as having an evolutionary character (...), nor even that one postulates its wholeness or consistency at the risk of simplifying to the extreme the terms of the comparison. History unfolds erratically, and explanations, or to be more realistic, rationalizations, given by those deciphering the past should always take into account pure contingency"* (Bayart, 1996[3]).

This article is a synthesis of multidisciplinary studies on the transformation of the dairy sector carried out in several regions of Vietnam between 2014 and 2016. It relies on field surveys of various stakeholders: farmers, processors, raw milk collectors, and local and national policy makers, as well as analysis of national secondary databases. The studies focused on the analysis of farm development pathways (Pham Duy Khanh et al., 2016) and on the transformation of sectors and territories (Duteurtre et al., 2015 and 2016; Nguyen Mai Huong et al., 2017). These data were complemented by a recent review of newspaper articles and scientific literature on agricultural development in Vietnam.

2. Đ*ổi Mới* policies and support for smallholder farming

a. The failure of state farms and emergence of a peasant economy

Up until the late 1980s, dairy farming in Vietnam was the exclusive domain of "state farms" (*Nông lâm trường*). These large-scale farms, some of which sprang from the nationalization of former colonial farms, relied on crossbred Holstein dairy cows. However, from the late 1970s up to the mid-1980s, these state farms suffered from the crisis afflicting the collectivist economic system (Brocheux, 2009). For example, between 1977 and 1985, the number of dairy cows on the Ba Vi state farm dropped from 1,113 to 265 heads (Vien Chan Nuoi, 2009 *cit. in* Duteurtre et al., 2015). Following these difficulties, and under the framework of a complete overhaul of the economic system, the *Đổi Mới* reforms led to the gradual abandonment of this government farm model and the development of the smallholder farm model.

During the 1970s and 1980s, the persistence of family plots and home gardens contributed to the maintenance of a significant residual peasant economy. The agrarian reform in 1954-1956 notably accorded landless farmers access to micro-plots with a maximum size of 1,080 m². Although these "micro-plots" only covered 5 to 20% of the cooperatives' land, they contributed more than half of household revenues between 1960 and 1975 (Brocheux, 2009). After the reunification of Vietnam in 1976, the importance of these family plots continued to increase. However, dairy farming, which previously had been carried out only on colonial farms and then on state farms, had not yet penetrated this family economy.

[3] Translated by us from French to English

The evolution of the cooperative system also was gradual. In January 1981, a system of "production contracts" (*khoán sản phẩm*) between families and cooperatives was set up by Communist Party Resolution 100 in order to improve the internal efficiency of cooperatives. The regime of course remained "hostile to the free market and private enterprise". However, this contract system made it possible for an official "private" form of remuneration of family labor to emerge (Brocheux, 2009). Here again, the nascent dairy sector was not affected by these developments within cooperatives. Nonetheless, Resolution 100 contributed to the emergence of a family farming economy.

b. **Smallholder farms at the core of the post-*Đổi Mới* dairy economy**

The official re-emergence of family farms in the Vietnamese dairy sector was made possible by the political, economic and land reforms of *Đổi Mới*. These reforms aimed to liberate the energies of individuals at the expense of collectivist organizations that had been deemed ineffective.

The change in policy was ratified at the Sixth Congress of the Communist Party in 1986. In 1988, Communist Party Resolution 10 recognized family farming as the principal agriculture production model and authorized small farmers to directly market their production. The Land Law of 1993 established the terms of the "right to the private use of land", organized around short-term land leases. These land use rights certificates (*giấy chứng nhận quyền sử dụng đất),* or "red books" (*sổ đỏ*), were granted for a renewable period while the land remained the property of the State. This land tenure system enabled a portion of collective land to be redistributed to families "based on the number of eligible beneficiaries per household" (Gironde, 2008). These land reforms would lead to the rapid growth of private agricultural production. In 2006, there were 10.46 million agricultural households farming on average 0.9 ha (GSO, 2018).

In the dairy sector, these reforms led to the development of small family dairy farms within or surrounding the perimeters of former state farms. The state farms, some of which held over 1,000 cows, had encountered major management problems and lack of finance. They were converted into research and development centers (the case of Ba Vi farm) or semi-private enterprises (the case of Moc Chau farm). The cows were given to former workers or to newly established smallholders. A small number of state farms were sold to private entities (the case of Son Dong farm).

To support this movement, the National Dairy Development Plan (NDDP), which was launched in 2001, put the growth of rural family farms at the heart of its strategy. Endorsed by Government, Decision No.167 put forward by the Prime Minister, this plan strengthened public farm support structures: credit for the purchase of heifers, technical training, subsidies for equipment and inputs. In parallel, several public sector investment programs aimed to strengthen rural infrastructure.

This post-*Đổi Mới* regulatory context allowed the development of individual smallholder projects, coupled with numerous investments by private national (e.g., Vinamilk and IDP) and international (e.g., Nestlé and Dutch Lady) companies. These companies purchased the milk and provided industrial feed and credit. This alliance between farmers, companies and local authorities boosted national production. Between 1990 and 2010, dairy production increased fivefold (Table I). In 2010, there were 20,000 dairy farms that had on average 6 cows and produced 328,000 tons per year (Figure 1).

This growth in the smallholder dairy sector was based on technical solutions adapted to the local constraints of very small farms that had under 1 ha at their disposal. This labor-intensive system was based on crossbred Holstein cows kept in tie-stall barns and trough feeding with a mix of industrial concentrates and green elephant grass fodder. Through this system, high yields could be produced on very small areas. It was accompanied by the emergence of a territorial network of service companies up and down the value chain that enabled this agricultural development: dairy processing units, dairy industries, concentrated feed manufacturers, raw milk collectors, traders. The transactions between these various actors was regulated by both formal and informal arrangements. The combination of contracts, formal credits, informal debts, interpersonal trust and moral obligation supported the circulation of resources and the establishment of the sector at local level. The emergence of this private sector under the smallholder regime also was supported by the provision of local public services (Duteurtre et al., 2015).

c. Interpreting the regime as a "peasant" regime

From 1990 to 2008, dairy farming in Vietnam was dominated by what may be described as a "peasant" socio-technical regime. This regime was characterized by the conjunction of a coherent set of practices, techniques and social rules (Table II). This period also corresponded to a "*rehabilitation of the family economy*" (Gironde, 2008), meaning to changes in collective norms and values. A new agriculture development model emerged. It was based on a social conception of the role of agriculture, as well as the emergence of a new demand for diversified foods such as dairy products that were considered synonymous with health and modernity. These changes in values are reflected in several changes in regulations and by the implementation of public policies supporting family dairy farming (liberalization of milk collection, support of public services through National Dairy Development Plan, etc.).

The emergence of this peasant regime was a response to a radical change in the socio-technical landscape (crisis of the collectivist economy, arrival of a market economy) that spurred the emergence of new regulations and public policies supporting family farms. The emergence of this regime over the 1990s and 2000s may also be interpreted as the result of several innovation niches that arose during the collectivist crisis: the continued use of "family plots" starting from the 1970s and the development of "production contracts" in the early 1980s (Figure 2).

3. The emergence of mega farms and the establishment of an "agro-industrial" regime

Since 2008, the dairy sector in Vietnam has undergone significant changes that are leading to a modified socio-technical landscape and the emergence of a new regime. Public policies have turned their focus to the industrialization of the dairy sector. This involves the promotion of large farms, reducing the trade deficit, promoting new health standards, and strengthening the competitivity of the sector as it opens to international markets.

a. The "peasant regime" called into question

First, the dairy sector in Vietnam was gravely affected by the melamine crisis. In October 2008, when the country was importing the equivalent of 618,000 tons of milk

equivalent each year, or 80% of national consumption, Vietnam had to deal with imports of adulterated milk powder from China. In China, the presence of melamine in numerous batches of infant milk powder led to the hospitalization of tens of thousands of young children and caused the deaths of six infants. Vietnam reacted by ceasing to import Chinese milk and by closing certain local industries using adulterated milk powder. This crisis led to renewed industry interest in local milk production in a context where consumer confidence in livestock farmers had been deeply damaged. Several industrial actors invested in supporting producers and in setting up specialized industrial dairy farms.

The melamine crisis occurred alongside an emerging demand for “healthy” and “safe” products (*thực phẩm sạch*) meeting industrial standards and safeguards. Following its entry into the WTO in 2007, Vietnam signed multiple trade agreements. Directly related to these developments, Law 55 on food safety was ratified in 2010 and led to several decrees and implementation circulars over the years that followed. Certification mechanisms thus emerged in other sectors such as meat and "safe" vegetables. These health safety policies promoted the industrialization of the dairy sector with a greater concentration of production and the integration of production by industrialists themselves.

In the livestock sector, a new type of policy also emerged in 2008 to meet the need to reduce the country’s dependence on imports. This change in direction was initiated by the Prime Minister’s Decision n°10/2008, entitled “Strategy on animal breeding development up to 2020”. The main goal of this strategy was to create the conditions for the emergence of intensive family farms and large industrial farms. In 2014, this decision was followed by Decision n°984 of the Ministry of Agriculture and Rural Development, which aimed to improve the value added of the livestock sector while ensuring sustainable development principles. This decision confirmed the orientation of the 2020 livestock strategy, but attempted to add some environmental safeguards. Along the same lines, Vietnam adopted a livestock law (Law 32) in 2018. This law emphasized the need for cooperation between livestock sector actors, the promotion of production areas with high health safety requirements and the continued coexistence of different livestock farming models. This clear inclusion in the law of the term “coexistence” well illustrates the State’s concern over the serious challenges to the peasant regime brought about by the rapid growth of larger farms.

b. **The promotion of “commercial farms” and “enterprises”**

The emergence of “large-scale” individual farms first was encouraged by the certification of family farms under the *trang trai* label, which we will call "commercial farms". This involved defining criteria for recording the largest family farms by local authorities at the district level in order to steer some aid programs towards these farms. The criteria for certifying farms as *trang trai* were defined first in 2000 by Circular n°69 of the Ministry of Agriculture. They were revised upwards in 2011 by Circular n°27 of the same ministry. In the livestock sector, the threshold was raised to a turnover of 1 billion VND. For a dairy farm, this represented a herd of about 25 adult dairy cows each producing 3,000 liters/year.

In 2016, the entire agriculture sector recorded 33,500 commercial farms defined under this “new formula”, of which 21,060 farms were in the livestock sector. These commercial farms accounted for only 0.35% of the total number of farms in the country, but their number had increased by 67% from 2011. This "commercial farm

economy" (*kinh tế trang trại*) represented 135,500 permanent jobs, of which 1/3 was composed of family labor and 2/3 of employees. During this time, the number of farming households diminished: it dropped from 10.5 million to 9.3 million between 2006 and 2016 (GSO, 2018).

In parallel, several regulations allowed "private firms" (*doanh nghiệp*) to be set up in agriculture and agro-industry. Between 2006 and 2016, these companies doubled in number, going from 2,136 to 3,846 across the entire country (GSO, 2018). In the dairy sector, these companies took charge of processing, supplying inputs and marketing dairy products.

In the dairy sector, this development resulted in the increase of farms with over 20 heads (Mard, 2019). In 2011, 9.3% of the herd was already held by farms with over 20 cows (Duteurtre et al., 2015). In 2018, this proportion was estimated to 33%. In addition to industrial farms, there were nearly 29 000 family dairy farms in Vietnam, among which 6% had 20 cows or more (Mard, 2019).

This period also saw the growth of national dairy processing industries with international ambitions. Following the gradual privatization of part of the capital of a former state dairy, the "Vietnam Dairy Company", that started in 2003, Vinamilk became a major player in the sector. In 2017, the company became the third largest private company in Vietnam, holding half of the market share in the dairy sector. In 2018, the State Capital Investment Corporation (SCIC), a public fund, held 36% of the company's shares alongside several private shareholders. Mention also should be made of the flotation on the stock market of TH true milk (166th largest private company in Vietnam in 2018), the takeover of the IDP dairy company by a Japanese investment fund in 2015, and the complete privatization of the Moc Chau Dairy Company in 2018.

The development of the industrial milk processing sector led to the adoption of private milk quality standards and quality control procedures that were implemented by processors and collectors. In 2017, the government published the standards QCVN 01-151:2017/BNNPTNT on "National technical regulation on milking and milk collecting establishment - Requirements for food safety". This regulation made most quality control procedures mandatory, though most farms "had not yet announced the conformity with those standards" (Mard, 2019).

It was, however, the emergence of giant dairy "mega-farms" that played a key role in upheaving the structure of the dairy sector in Vietnam.

c. The emergence of the "mega farm" model

Consumer enthusiasm for products made from local milk (following the melamine crisis), government support for this type of project, and the gains expected from an integrated industrial organization led to the emergence of numerous mega farms.

Between 2007 and 2017, the private Vinamilk group, which mainly collected milk from small farms, set up 10 industrial farms scattered across the entire country. In 2018, those industrial farms held a total of 23,500 heads. The same year, Vinamilk launched a new mega farm with 4,000 heads in Thanh Hoa. In 2019, the company announced the launch of a new 8,000 head mega farm project in Tay Ninh and another in Laos. Totally, 27 000 pure dairy cows are raised in those mega farms (Table III).

In 2009, the TH Milk company founded what would become the largest private mega farm in Vietnam. Set up in Nghe An province, this farm cluster reach 45 000 cows in

2014, and 49 895 cows four years later, including 26 231 milking cows (MARD, 2019). In 2017, the firm announced the launch of a new mega farm project with 10,000 heads in Ha Giang province, and then another with 5,000 heads in Phu Yen. The same company said that in 2019 it planned to set up a farm with 10,000 cows in Thanh Hoa and another with 20,000 cows in Soc Trang.

Other recently established private mega farms include the 1,000-head Future-Milk farm installed in 2008 on the former Son Dong state farm, and the three relatively smaller industrial farms set up between 2010 and 2015 by the Chau Moc Company.

In 2014, the mega farms held 25% of the national herd, compared to less than 5% in 2008. The rest remained in the hands of family farms (Nguyen Mai Huong et al., 2016).

These mega farms constituted an innovation niche that generated renewed interest in high-tech and capital-intensive systems to the detriment of more labor-intensive family systems. These production units are based on raising pure Holstein cows in barn stalls and using an automated feed system of rations composed of a mix of silage and industrial feed. To complement forages produced on farms, whole plant corn is bought from surrounding small-hoders and dry hay of Alfalfa is imported. Water filtration systems allow to provide sufficient water to the herd. Animal health, milking and breeding procedures are managed through individual animals monitoring softwares based on digital technologies. The cultivation of fodder crops on large areas, trough feeding and milking activities are all mechanized, resulting in higher labor productivity than on family dairy farms. Milk is processed in large scale processing factories.

The units also are based on the provision of large land holdings, mostly once part of former state farms, contracted by local government. Mega farms are therefore mostly located in rural areas, whereas family farms intend to concentrate in periurban regions (Nguyen Mai Huong et al., 2016). According to Võ Trường Sơn (1989), there were several hundreds of former state farms throughout the country. Those represent an important land lever for developing large capitalist production units throughout the 2000s and 2010s.

d. **Interpreting the regime as a "corporate" regime**

We propose to describe the socio-technical regime that emerged after 2008 as a "corporate regime". Indeed, this period has been characterized by the domination of large private firms (corporations) that invest in processing factories and industrial mega farms. This new regime aimed to promote productive investments in agro-industry and private firms at the expense of the complementary relationship between firms and smallholders that had previously prevailed (Table II). If this new arrangements do not replace entirely the former "peasant regime", it appears to become more and more dominant (Figure 2).

This transformation of the socio-technical regime appears both as a change in the development model and a strategic adaptation by actors to a new socio-technical landscape. The support of mega farm projects by public authorities appears to rely on several justifications that include using digital technologies, investing in mechanization of production chains, increasing international competitiveness, and promoting international quality standards. Largest family farms are seizing opportunities offered by the market to increase in size thanks to loans obtained from firms. But many smallholders are facing difficulties to reach those new standards. Firms are deciding to invest where there are the most promising opportunities, whether this involves access to land or raw milk collection. Furthermore local authorities are

promoting the establishment of industrial systems to generate local jobs and revenues for their districts and to respond to strong growth in domestic demand for milk.

These strategic decisions are leading to a re-configuration of value chains that acknowledge the "co-existence" between smallhoder farms and mega farms. This co-existence of production structures based on different models relies on local "compromises" between smallholder producers, industries and local authorities that are discussed in the last section.

4. The coexistence of dairy models: between pragmatic compromises and the dynamics of capitalism

The emergence of the new "corporate" regime has not completely replaced the former "peasant regime". Rather, peasant farms have been competing (or interacting) with industrial farms for accessing resources and markets. And public services have managed this coexistence through different local pragmatic compromises. The trade-offs made by the authorities to guide the transition have been illustrated in particular in two important areas of public action: the management of land; and the promotion of local partnerships. These two levers played a key role in the evolution of different forms of livestock farming and in the level of coexistence between different development models observed in the field.

a. Control of land, a prerogative of the State to guide the transition

Since *Đổi Mới*, land has appeared to be a critical element in the socio-technical landscape. Its control by government services greatly empowered the State to guide the outcome of the transition. Beginning in the early 1990s, "land distributions" to smallholder families after the reforms promoted a model of smallholder farming. This sharing of resources was particularly equitable with on average 0.9 ha of land made available to each household. This redistribution, which was enshrined by the allocation of "red books" to smallholder families, engendered the growth of diversified farming systems that were very land and labor intensive (Pham Duy Khanh et al, 2016).

However, starting from 2008, the authorities favored the consolidation of land to allow the gradual emergence of larger farms able to meet the needs noted in the livestock development strategy. The number of "commercial farms" increased while the number of farming households decreased. At the same time, local authorities promoted land transactions favoring the emergence of agro-industries by attributing rights over land that had remained under direct State management. This trend was particularly clear in the dairy sector with the emergence of mega farms mentioned above. Naturally, possession of rights over land held by former state farms played a significant role in this land transition. More recently, the 2013 land law reform encouraged land consolidation, and the 12th VCP Congress in 2016 recognized land concentration as a priority (Phuc To, 2019).

b. Local partnerships: a factor structuring the dairy milk-sheds

The importance of local authorities in the management of national policy priorities also was reflected in the emergence of local partnerships to support the creation of dairy milk-sheds. When the mega farm projects were established in areas where smallholder dairy production already existed, partnerships that had been set up between local authorities, private investors and smallholder farmers led to compromises. Mega farms were then presented either as "demonstration farms" (in the case of Ba Vi industrial farm) or as "offspring production units" that could supply

quality heifers to the surrounding farmers. The mega farms also offered the creation of local jobs, the purchase of maize fodder from smallholder farmers in the area, and the sale of manure to crop-cultivation farms.

In the midst of these adjustments, local authorities acted to ensure this coexistence. For example, the adjustments led to the establishment of agreements between companies and local authorities, such as the MOU signed in 2012 between IDP and Bavi District authorities. Local authorities also encouraged the establishment of local certifications promoting the collection of raw milk, such as in Moc Chau and Ba Vi. In Ha Nam province, the Friesland Company set up a partnership with 189 dairy farmers of 17 cows each on average. With the support of the local authorities, they intended to promote the setting up of 50 “professional farms” of 80 to 100 cows on 65 ha land dedicated for this project in the Moc Bac Commune (Duy Tien District) (MARD, 2019).

In this spirit, Circular 14 of the Ministry of Agriculture was published in 2017 to encourage the establishment of public-private partnerships (PPP) to guide investments in agriculture. This circular was designed to support investments of private firms while promoting partnerships with public authorities and smallholder farmers. In order to implement this new strategy, the Decision 1322/2019 of the Ministry of Agriculture set up a PPP task force in the livestock sector. This Taskforce, however, had not yet been very active up to September 2019 (Mard, 2019).

However, coexistence and complementarity between smallholder farms and mega farms did not always appear to be possible. In these local partnerships, sector rationales sometimes outweighed the pursuit of the coexistence, resulting in competition and exclusion.

c. The limits of sector rationale : the risks of farmers’ exclusion

In 2015, for example, the milk crisis in the Hanoi region, caused by a drop of milk prices, led many companies to concentrate on collecting milk from large farmers in order to reduce their procurement costs. Smaller farmers were forced to stop dairy production and to change farm activities. In the south of the country, during the 2016 milk price crisis, the district authorities in Cu Chi wanted to develop a local certification trademark for products made from milk produced in Cu Chi. However, the district's identity was not sufficiently renowned to support the development of a distinct market niche for products with this label.

The absence of compromise sometimes has led to local tensions. This was the case, for example, in 2014 around the Nghia Dan TH farm after surrounding villages were polluted by manure. In these situations, the authorities tried to accompany the evolution of company strategies towards more sustainable pathways. Concretely, companies invested in local community support projects or in scholarship programs with varying degrees of success. These experiences show that the change dynamic of dairy milk-sheds in Vietnam is playing out within a collaboration between the State, companies, and smallholder farmers. Due to the contingency of local trade-offs, the outcome of the transition remains uncertain.

This appeals for more territorial strategies where coexistence between firms and smallholder farmers could be promoted in favour of more balanced, sustainable dairy development pathways (Duteurtre et al., 2016).

Conclusion

The case of Vietnam overturns the traditional view of the design of the agroecological transition. While in Europe the model geared around intensive, production-oriented systems is considered to be "conventional", in Vietnam, it is viewed as a form to be promoted, and as the result expected from the transition. At the same time, the emergence of mega farms represents a return to a concentrated form of production that closely resembles the state farms that were set up during the collectivist period. What is different is the growing importance of financial capital and high technology in the transformation of these economies. As De Koninck (2010) notes with regard to the agrarian transition, we are witnessing a "*changeover from a society characterized by accumulation in agriculture to a society where accumulation takes place within the industrial sector*". The new regime also relies on a social construction of new food models concerned with "health safety". And it gives little consideration to environmental issues.

Our observations of the livestock transition in Vietnam emphasizes the multi-dimensional character of the socio-technical change. The transition appears to be a gradual process in which individual, collective and cognitive dimensions are interacting to produce differentiated pathways (De Terssac et al., 2014). Rather than replacing some forms by others, the transition is resulting in parallel pathways, or, in other words, in the superposition of several regimes whose importance varies according to trade-offs made at the local level. Ultimately, the trade-offs made by public authorities appear to be "pragmatic" to the extent that they reflect adjustments to socioeconomic contexts undergoing radical change.

In Vietnam, agrarian capitalism appears to be a form of production that is competing directly with smallholder production on the market for raw milk to be processed. Furthermore, the emergence of the mega farm model is helping to reduce the legitimacy of family production in the eyes of consumers and decision makers. This economic and cultural competition does not, however, appear to be as clear cut in local level trade-offs, where one finds the coexistence, the superposition and the entanglement of different forms of production.

Aknowledgement: The authors are grateful to ANR and AIRD who funded this research under the Revalter project.

References

Bayart JF, 1996: « L'historicité de l'Etat importé », Les Cahiers du CERI, n° 15 – 1996, 44 p.

Darnhofer I., 2015: « Socio-technical transitions in farming : key concepts » in Sutherland et al. (Eds), 2015: *Transition pathways towards sustainability in European agriculture. Case studies from Europe*, CAB International, pp.17-31

De Koninck R., 2010 : « La transition agraire », Lagrée S. (Ed.), 2010, pp. 45-58

De Terssac G., Truong An Quoc, Catlla M. (Dir.), 2014 : *Viêt-Nam en transitions*, ENS Editions, Paris, 295 p.

Duteurtre G., Pham Duy Khanh, J.D. Cesaro, 2015 : « Bassin laitier de Ba Vì : Un territoire d'élevage façonné par les politiques publiques, entre logiques industrielles et soutien à la paysannerie », in Napoleone, Corniaux, Leclerc (Ed.), 2015 : Voies lactées : Dynamique des bassins laitiers entre globalisation et territorialisation, Cardère Editeur, Paris, pp.67-87

Duteurtre G. Sautier D., Pannier E., Nguyen Mai Huong, 2016 : « Alliances Between Agri-Chain Actors for a Sustainable Development of Territories in Vietnam », in Bienabe et al. (Eds.), 2016 : Sustainable Development and Tropical Agri-chains, Quae, 16 p. DOI 10.1007/978-94-024-1016-7_5

Fortier F. and Tran Thi Thu Trang, 2013: "Agricultural Modernization and Climate Change in Vietnam Post-Socialist Transition", *Development and Change 44 (1): 81-99*

Geels F.W. 2004 : "From sectoral systems of innovation to socio-technical systems : Insights about dynamics and change from sociology and institutional theory" *Research Policy* 33 (2004) 897–920

Geels F.W. and Schot J., 2007: "Typology of sociotechnical transition pathways", *in Research Policy* 36 (2007), pp. 399–417

Gironde C., 2008 : « Grandes réformes et petits arrangements dans les campagnes vietnamiennes », *in Autrepart* (48), 2008, p. 113-128 http://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers18-07/010045228.pdf

GSO 2018 : « Results of the rural, agricultural and fishery census 2016 », General Statistical Office (GSO), Edited by Statistical Publishing House, Hanoi, 680 p.

Lagrée S. (Ed.), 2010 : Transitions décrétées, transitions vécues : du global au local, approches méthodologiques, transversales et critiques, Actes de l'université dété régionale en sciences sociales « Les journées de Tam Dao » (Vietnam), 411 p.

MARD, 2019 : Report of a Workshop on "Livestock Outlook and PPP Dialogue: Challenges and Potential to Develop Dairy Farming and Dairy Products" held in on 24th September, 2019 in Pan Pacific Hotel, Hanoi, organized by Partnership for Sustainable Agriculture in Vietnam (PSAV) Secretariat, Ministry of Agriculture and Rural Development (MARD), Hanoi

Nguyen Mai Huong, Cesaro J.D., Pham Duy Khanh, Hong Vu Quang, Duteurtre G., 2016 : "Hướng đi nào bền vững cho phát triên chăn nuôi bò sữa ở Việt Nam: sản xuất nông hộ hay đầu tư qui mô lớn?" Bài báo nộp cho Tạp chí Khoa học và Công nghệ Chăn nuôi; Hà Nội, tháng 3 năm 2016, [*Tendancy for sustainable development in Vietnam: family farming versus large-scale investments ? Journal of Livestock Science and Technologies, Hanoi, March 2016, pp. 12-21*]

Nguyen Mai Huong, G. Duteurtre, P. Moustier, 2017: "What shapes the governance of the dairy value chain in Vietnam? Insights from Ba-Vì milkshed (Hanoi)" *World Food Policy*, Vol. 3, No. 2 / Vol. 4, No. 1, pp. 57-81,

doi: 10.18278/wfp.3.2.4.1.4

Pham Duy Khanh, Duteurtre G., Cournut S., Messad S., Hostiou N., 2016 : « Caractérisation de la diversité et de la durabilité des exploitations laitières familiales au Vietnam : une étude de cas en zone péri-urbaine de Hanoï », *Rev. d'élev. méd. vét. pays trop.*, 69 (4), pp. 131-141.

Phuc To, Sango Mahanty and Adrew Wells-Dang, 2019 : « From "Land to the Tiller" to the "New Landlords"? The Debate over Vietnam's Latest Land Reforms », Land, 8, 120; doi:10.3390/land8080120

Viet Nam News, 2016: "Large-scale rice fields booming", July, 02/2016, https://vietnamnews.vn/society/298963/large-scale-rice-fields-booming.html#UV3kPbdgydz0S47V.97

Vinamilk, 2019 : Annual Report 2018. https://www.vinamilk.com.vn

VNA, 2017 : "Tien Giang to expand large-scale fields", published in Vietnam +, https://en.vietnamplus.vn/tien-giang-to-expand-largescale-fields/105269.vnp

Võ Trường Sơn. 1989. *Lịch Sử Cuộc Chiến Đấu Của Tộc Việt*. http://www.truclamyentu.info/tlls_lichsuvietnamcandai/lichsucaicachruongdat36.htm

Vy Thao, 2015: "TH true Milk-A Leading Brand in Vietnam's Fresh Milk Market", *Báo Ảnh Việtnam* 2/07/2015, https://vietnam.vnanet.vn/english/th-true-milk-a-leading-brand-in-vietnams-fresh-milk-market/190058.html

Zufferey N., 2010 : "La transition: réflexions épistémologiques à partir du cas chinois", in Lagrée (2010), pp. 29-44

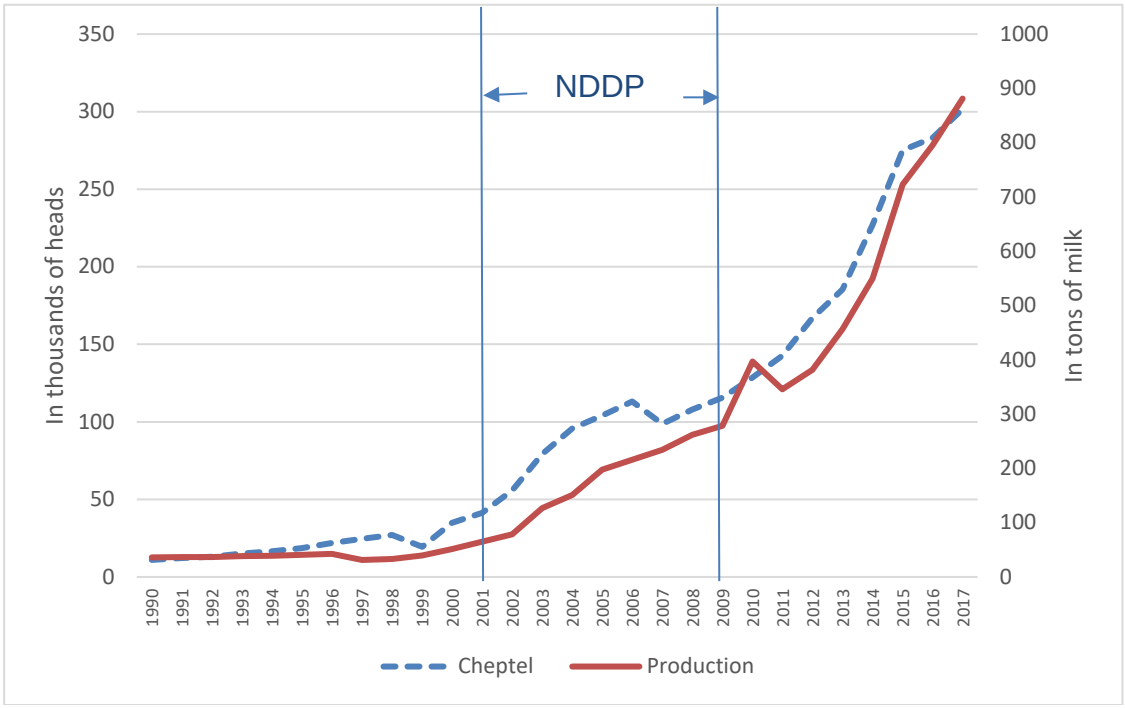
TABLES AND FIGURES

Table I: Comparison of the evolution of milk production in 6 Asian countries (tons)

Year	1990	2000	2010	2017	Ratio 2017/1990
Bangladesh	1 593 503	1 507 310	2 035 550	2 005 405	**1.3**
Indonesia	599 155	1 009 289	1 492 848	1 540 200	**2.6**
Thailand	130 278	520 115	911 000	421 961	**3.2**
India	53 678 000	79 661 000	121 847 000	176 272 357	**3.3**
China	6 820 400	11 986 000	40 803 769	34 469 224	**5.1**
Vietnam	60 471	84 525	338 662	909 103	**15.0**

Source: FaoStat, 2019

Figure 1: Evolution of dairy herd and national milk production in Vietnam from 1990 to 2017



Source: GSO, 2019 (NDDP = National Dairy Development Program)

Table II: Description of the two socio-technical regimes characterizing the dairy sector from 1986 to 2019

Domains	***Socio-technical components of the "peasant" regime (1986-2008)***	***Socio-technical components of the "agro-industrial regime" (2008-2019)***
Livestock practices	**Intensive production practices** based on keeping crossbred dairy cows in tie-stalls, the purchase of industrial feed, intensive cropping of green fodder	**Intensive commercial family farms** and **industrial mega farms** based on keeping housed pure breed Holstein cows fed with a mix of concentrates and silage.
Market organization	**Liberalization of domestic markets**, regular sale of collected milk to industry **Construction of a mixed public-private economic fabric** made up of state companies, technical services, private firms and SMEs **Development of a mass distribution system** (shops, supermarkets) and emergence of new forms of consumption	**Opening markets to international competition** through trade agreements and the establishment of health standards **Price competition** **Construction of dairy oligopolies** made up of large dairy companies, some of which encompass all activities up and down the value chain **Development of an agro-industrial capitalism** based on the Hanoi and Ho Chi Minh City stock markets
Technology, know-how, research and development	**Artificial insemination** practices enabling crossbreeding, control of the health environment of livestock farms, know-how and innovation involving **fodder crops** and **milk collection and processing**	**High labor productivity** systems based on the **mechanization** of most of livestock practices and **advanced dairy technology and high level of capital investment** (precision livestock farming) **Industrialisation of processing**
Cultural values and food and social standards	**Social issues:** Dairy production as a means to boost rural families **Health issues:** Milk = health, growth and modernity	**Social issues:** Taste for modern technology and gigantic-scale technology **Health issues:** Industrial milk = symbol of health security, health and modernity

Figure 2: Sociotechnical pathway of the dairy sector in Vietnam