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Pangasius at risk

Governance in farming and processing, and the role of different capital

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Abbreviations

ASC	Aquaculture Stewardship Council
BAP	Best Aquaculture Practice
BRC	British Retail Consortium
CTU	Can Tho University
DDT	Dichlorodiphenyltrichloroethane
DONRE	Department on Natural Resources and Environment
EC	European Commission
GAP	Good Agriculture Practice
GMP	Good Manufacturing Practice
HCCA	Health Care Compliance Association
HACCP	Hazard Analysis and Critical Control Points
IFS	International Food Standard
ISEAL	International Social and Environmental Accreditation and Labelling Alliance
ISO	International Organisation for Standardization
MARD	Ministry of Agriculture and Rural Development
MONRE	Ministry of Natural Resources and Environment
NAFIQAD 6	National Agro-Forestry-Fisheries Quality Assurance Department 6
NGO	Non-governmental Organisation
PC	People's Committee
PAD	Pangasius Aquaculture Dialogue
SQF	Safe Quality Food
SSOP	Sanitation Standard Operating Procedures
VASEP	Vietnamese Association of Seafood Exporters and Producers
VoV	Voice of Vietnam
WWF	World Wildlife Fund

Abstract

The environmental impact of Vietnamese Pangasius production (Pangasianodon hypophthalmus and Pangasianodon bocourti) has been recently discussed as failing to comply with standards of sustainability, caused ostensibly by deficiencies in governance, which are driven by internal and external state mechanisms. The topics of Pangasius production and its sustainability have been approached by various scholars, who have questioned the reliability of discussions on sustainability in European retail industries as a means of protectionism (Bush and Duijf 2011). A bottom-up research approach will be applied to first of all elaborate on the perspectives of Vietnamese (potential) users on top-down governance mechanisms, and then secondly to identify further how institutions of governance on different scales are missing. This method will help to draw a more holistic picture and thus create a better understanding of controversies surrounding the sustainability of Pangasius production. The paper is based on a literature review on governance mechanisms in the Vietnamese Pangasius sector, as well as empirical research, in particular semi-structured interviews conducted at Pangasius farming and processing sites in Can Tho City, Vietnam. Using BOURDIEU´s theoretical approach of "forms of capital" (theory of practice), the actions of actors in Pangasius sector are analysed and understood based on a combination of economic, social and cultural capital. The research thus draws attention to an already existing focus on economic aspects in the Vietnamese Pangasius sector, but goes further by showing that especially social capital and local institutions constitute important variables concerning the implementation and observance of governance mechanisms. These mechanisms can both compensate and create economic constraints and need to be considered in order to achieve sustainability in the Vietnamese Pangasius sector.

Keywords: governance, environmental sustainability, capital, Pangasius

1 Introduction: weak governance triggers public discourses on the sustainability of Pangasius

The Vietnamese Pangasius (Pangasianodon *hypophthalmus* and Pangasianodon *bocourti*) is a fish at the centre of one of the fastest growing freshwater aquacultures in the world, located in the Mekong Delta. Due to improved propagation techniques and artificial breeding since the end of the 1990s, Pangasius aquaculture converted from extensive to intensive pond farming. In a ten-year period, from 1997 to 2007, fish numbers, of which more than 90% are exported, increased 45-fold from 22,500 tons to 1,200,000 tons per year, while the farming area for this boom expanded eightfold from 1,250 ha to 9,000 ha. At this time, Pangasius aquaculture contributed to more than 50% of Vietnam's total aquacultural output and triggered the development of a processing sector and other related industries, providing more than 150,000 livelihoods (PHUONG AND OANH 2009).

The development took place as a consequence of renovations (*Doi Moi*) and market liberalisation, both of which had been taking place in Vietnam since the late 1980s. With increasing market integration as well as the renunciation of collectivism and a centrally planned economy, a diverse range of farming activities and livelihoods was enabled and contributed to economic growth (VASAVAKUL 1995; BERESFORD 2006; VORMOOR 2010).

Besides the huge potential of Pangasius farming and its related industries, the whole sector is not a complete success story and its public image is controversial. Subjects of discussions vary between food safety and hygiene and ecological, social and economic sustainability (BOSMA AND VERDEGEM 2011). In recent times, controversy on the environmental sustainability of Pangasius production is driven mainly by international markets, international non-governmental organisations (NGOs) and Vietnamese stakeholders in or related to the Pangasius sector. The following two examples give a brief insight into this matter.

First, in November 2010, STRUAN STEVENSON, Scottish Minister of the European Parliament, made a speech on food security in Europe. Stevenson stated that the Mekong River was "one of the most heavily polluted rivers on Earth", where factories would dump "thousands of contaminants into its slow-flowing waters", resulting in environmental conditions where the water was "teeming with bacteria and poisoned with industrial effluents including arsenic, mercury and DDT[1]." He concluded his speech by highlighting the need to encourage more investment into European aquaculture to satisfy consumer demands today and in future for "first class, fresh and healthy fish produced in a sustainable and carbon efficient way" (STEVENSON, S. citied in FIS 10.11.2010).

Second, in December 2010, another battle on the Pangasius and its sustainability commenced. The Vietnamese government, fishery associations, Pangasius processors and farmers felt unfairly offended by the World Wildlife Fund (WWF) putting Pangasius on the red list of its consumer guide, meaning that consumers were encouraged to avoid the product. The WWF's main arguments were that, firstly, "[tra fish] farms pollute the natural environment around them, because nutrients, medicines and pesticides are washed into the surrounding rivers and lakes", and secondly that "there is no assurance that the feed used in production does not come from over-fished wild stocks" (THANH NIEN NEWS 03.12.2010).

From the Vietnamese side, the red listing was considered "groundless and defamatory" and it was strongly opposed "based on unscientific, incomplete and biased evidence" (PHAM ANH TUAN, SAIGON

[1] Dichlorodiphenyltrichloroethane.

TIMES 06.12.2010). To overcome disagreement on the sustainability of Pangasius production the Vietnamese Association of Seafood Exporters and Producers (VASEP), together with the Vietnamese government, denied the accusations and firstly offered closer cooperation with the WWF by supplying information and acquiring constructive opinions and then organised a fact finding tour for WWF experts (VOV 06.12.2010; VIETNAM NEWS 08.12.2010).

The battle finally ended after around two weeks following the issuance of a Memorandum of Understanding (MoU). Both sides agreed on a commitment to ensure that the Pangasius would be recognised globally as a sustainable product (WORDFISHING.NET 21.12.2010). Furthermore, the WWF acknowledged its "mistake", putting the Pangasius on the red list while promising to modify its seafood guide by placing the fish on a list labelled "moving towards certification" (VIETNAM NEWS 16.12.2010; FIS 16.12.2010). By 2015, VASEP, with the support of the Vietnamese government, and the WWF want to ensure that Pangasius farming will meet global GAP standards and that enterprises as well as farmers will understand the certification of the Aquaculture Stewardship Council (ASC) (VIETNAM NEWS 16.12.2010; WORDFISHING.NET 21.12.2010). This aspect will be taken up again in a later chapter.

Examples show that the central issues surrounding discussions on Pangasius production have focused increasingly more predominantly on its ecological sustainability, but discussions are coined by the different, sometimes contrasting, interests of participating actors. Following MANSFIELD (2003, p. 332), these interests, based on individual or common perceptions, cloud actors' objectivity and lead to a strategic clash of constructed intentions:

> "*Economic debates over access to markets and the competition that arises with free trade and global integration works through the ways that distinctions are made, and made meaningful.*"

Such "meaningful distinctions" are part of the discussions on Pangasius farming and processing, too. Conflicts do not exclusively deal with sustainability, or for that matter food safety and hygiene. Instead, these subjects concern market access and protection, although it has become a complex undertaking to distinguish between those different aspects (BUSH ET AL. 2011). Nevertheless, a critical assessment of the Vietnamese Pangasius sector addresses problems in governance. For example, the WWF's devaluation of Pangasius in its consumer guide was seen as necessary to reduce "the problems in management and control" in the sector (INFO TV 03.12.2010; FIS 06.12.2010).

Against this background, governance in the Pangasius sector is portrayed further within this paper as environmental governance, in order to better understand recent challenges and conflicts among various actors on ecological sustainability and to "preserve the ecological systems and resources necessary for economic and social life – as an important prerequisite for meeting the future needs of humanity" (LITTIG AND GRIEßLER 2005). This will be done by asking how difficulties in governing the environmental impact of Pangasius farming can be explained by considering the perspectives of fish farmers and processors in Can Tho City, Vietnam.

This question is framed in a theoretical discussion on BOURDIEU´S capital approach by analysing the strategies of Pangasius farmers and processors, who are equipped with different forms of capital to exert influence and enforce their interests.

As the introduction exposed that ongoing struggles on sustainability are grounded on shortcomings in governance, the argumentation of the paper will continue with a general chapter on environmental governance, in order to lay the foundations for a more specific description of governance, and especially environmental governance mechanisms, in the Vietnamese Pangasius industry. In the next step, the implementation process for environmental governance tools will be

elaborated on from the perspectives of Pangasius farmers and processors in order to finally reach a conclusion and recommendations on potential ways to improve governance in the sector.

The paper is based on newspaper articles, interview materials, scientific literature and grey literature. Additionally, the present paper draws on semi-structured interviews that were conducted at nine fish farms in Tan Loc commune, Thot Not district, and four Pangasius processing companies on the Tra Noc industrial park. Both research sites are located in Can Tho City. Field research[2] was carried out during April 2010 and March 2011.

[2] WISDOM Project (http://www.wisdom.caf.dlr.de/); dissertation on "Factors constituting fish farming practices in Can Tho City, Vietnam" (draft title) is expected to be published in 2013.

2 Environmental governance: from state sovereignty to matters of the global civil society

This chapter provides an overview on environmental governance and its transition over time. It tells the story by focusing on the decline of the role of the state in a globalised world, where new actors have appeared and started competing with 'old forces' for influence and power by new means. The chapter therefore aims to give an overview on recent developments in environmental governance in order to provide an overarching context for the presented case.

2.1 The decline of the role of the state

Until the 1970s, the nation state was recognised as the "prime agent" of environmental management, and the "state bureaucratic authority" implemented its policy through "centralized control" (LEMOS ET AL. 2006, p. 302). With the decline of the role of the state in a globalised world, and changing paradigms grounded in neoliberal institutionalism and free trade, state authorities engaged in wider and more complex relations to keep national economies competitive (PATERSON ET AL. 2003; LEMOS ET AL. 2006). Therefore governance, defined by RHODES as a "means for authoritatively allocating resources and exercising control and coordination" (1996, p. 653), no longer exclusively lies in the hands of the nation state, indicating that a state's traditional sovereign decision-making authority can no longer been taken for granted (CASHORE 2002).

2.2 The emerging power of non-state-based actors

Since state sovereignty has started to erode, decision-making processes have been acknowledged as negotiation processes among various agents with "vested interests" (ADGER 2003, p. 1095 such as state actors, business actors and environmental or civil society-based groups such as NGOs, local communities and individuals (CASHORE 2002; LEMOS ET AL. 2006; ADGER 2003). Additionally, LIVERMANN (2004) identifies consumers as new and important actors, who can shape environmental policy by organising consumption behaviour accordingly to exercise the power to boycott or award companies regarding their production standards. By bringing consumers into the game, markets have gained a central role in governing environmental as well as social issues. Early mechanisms, for example energy taxes, eco-labelling and certification schemes, were introduced by a number of Western countries from the 1960s onwards (JORDAN ET AL. 2003; LAFFERTY AND MEADOWCROFT 2000).

Since the use of market-oriented policy instruments is increasing globally and addresses "matters of concerns to global civil society" (CASHORE 2002, p. 503), "good governance" implies that "competitive rules are known, and are applied transparently" (HISHAMUNDA 2009, p. 29). Despite the presence of various potentially competitive actors contesting traditional sovereignty, government and governance are not mutually exclusive (BULKELEY 2005) and, as LEMOS ET AL. (2006, p.298) states:

> "*Today a broad array of hybrid environmental governance strategies is being practiced and it has become clear that seemingly purely market-, state-, or civil society-based governance strategies depend for their efficacy on support from other domains of social interaction.*"

Further, BERKES (2002) urges us to recognise that environmental governance is often cross-scale, and neither small- nor large-scale. Thus, we find state-driven, non-state-driven and hybrid governance systems operating through international accords, national policies and legislation, local decision-

making structures, transnational institutions and environmental NGOs (LEMOS ET AL. 2006). Such new and different forms of actor constellations have created innovative tools and practices, thus reorganising power relations in governance.

3 Environmental governance mechanisms in the Vietnamese Pangasius sector

This chapter outlines a brief illustration on environmental governance in the Vietnamese Pangasius sector, which has to be acknowledged as a combination of mechanisms deriving from state legislation and non-state-driven governance mechanisms. This hybrid character has high relevance for the Pangasius sector and will thus be elaborated on in the following subsections. This chapter will also provide insights into environmental state legislation and point out weak spots that constitute the need for external governance mechanisms aiming at both substituting the weakness of state legislation and increasing the image of the Vietnamese Pangasius.

3.1 State legislation and the need for external governance

The lead on state legislation in aquaculture is principally taken by the Ministry of Natural Resources and the Environment (MONRE) and by provincial authorities. In terms of environmental governance they are responsible for directing, guiding and supervising the implementation of legislation on environmental protection in aquaculture. The General Department of Aquaculture, which belongs to the Ministry of Agriculture and Rural Development (MARD), is responsible for environmental protection in aquaculture[3], whereas the Department for Science, Technology and the Environment (also MARD) is in charge of environmental management in processing companies[4]. Waste water from aquaculture and processing companies has to meet national standards on waste water quality, but its management is still considered a critical issue (CTU 2011). Currently, the main environmental challenges are seen in water pollution from aquaculture and processing companies, as Picture 1 illustrates:

Picture 1: Left: Untreated waste water discharge at a Pangasius farming site; Right: Pond mud and untreated waste water being discharged into open surface waters.
Source: Sven Genschick

Moreover, and partly enforcing current shortcomings, cooperation between different sectors and authorities regarding the use and planning of water resources is considered weak. The most striking issue rests currently in the institutional sphere, as MARD has control over environmental protection and MONRE over natural resources management (CTU 2011; WAIBEL 2010).

[3] Decision No. 05/2010/QD-TTg

[4] Circular No. 14/2009/TT-BNN

According to Vietnam's own view on the poor enforcement of state legislation and planning in Pangasius farming and processing, as well as the need to boost the credibility of Vietnamese products, the country's government decided to supplement domestic regulations with international standards in order to govern food safety, quality and hygiene, as well as those social and environmental aspects relevant to production processes (BUSH ET AL. 2009). Additionally, NGOs and other industries are competing to establish their own specific standards for socially and environmentally sustainable production and certification systems to regulate compliance (BUSH ET AL. 2009). Such an approach is common in emerging, weakly regulated markets, where requirements regarding food quality, sustainability and working conditions become more important. These requirements have forced Pangasius farmers as well as processors to adapt common practices for satisfying customers' demands. Thus, non-state market driven mechanisms of governance either have to find niches in or complement contemporary state legislation to govern the Pangasius sector in Vietnam on an even footing (BUSH ET AL. 2009).

3.2 Certification schemes as external governance mechanisms in Vietnam's Pangasius sector

In Vietnam, three different certification schemes are in place. 'First party' certifications are exclusively used on national level for profiling single companies' images. Instead, 'second-party' certifications are established within business-to-business relations and 'third-party' certification schemes represent industry-wide agreed standards at national and international levels (BUSH ET AL. 2009). In order to be competitive in international markets, the latter is essential for Vietnamese Pangasius processors and of growing importance for farmers as well.

The most common 'third-party' certification schemes in the Vietnamese Pangasius industry are International Standard Organisation (ISO) norms, Hazard Analysis and Critical Control Points (HACCP) and Safe Quality Food (SQF), each of which addresses food quality and safety aspects. The latter requires of a farmer a "clean pond, the fish fry to be free of antibiotics, and the fish feed to be hygienic and free of banned antibiotics" (PHUOC 2011, p. 85). Pangasius processing companies forward these requirements to Pangasius farmers and also demand the presence of white meat, which is the first visible indicator of a fish with the potential to be of good quality. These demands are specified by a frequently updated list of antibiotics prohibited in aquaculture, respectively Pangasius farming, issued by MARD.

Besides standards and certifications solely managing food quality and safety issues, environmental and social issues are emerging within 'third-party' certification processes. The most promising certification schemes for farming and processing sites are 'Global GAP', the Best Aquaculture Practice (BAP)[5] certificate and the Aquaculture Stewardship Council (ASC) certificate (BELTON ET AL. 2011). The latter is a product of the Pangasius Aquaculture Dialogue (PAD), initiated by the World Wildlife Fund.

Global GAP requires seafood products to be produced in a way that reduces detrimental environmental impacts, including the utilisation of chemicals. It also requires a responsible move to ensure workers' health, safety and welfare (PHUOC 2011, p. 85). Core elements of Global GAP certification address food security, occupational safety in production processes and aspects of environmental protection. However, the WWF has criticised the environmental standards of Global

[5] BAP was initialised in 1997 by the non-profit NGO 'Global Aquaculture Alliance'. Its four main focus areas are community, the environment, food safety, and environment.

GAP certification as too limited and see further deficiency in the non-visualisation of certification for the consumer on the product (WWF 2011).

Instead, the WWF-driven Pangasius Aquaculture Dialogue, which is based on seven principles and follows an assessment characterised by quantitative and qualitative indicators as well as questionnaires, is the only ISEAL[6] compliant scheme for Pangasius farming. All standards are planned to be applicable as based on the actual performance levels of the top 20% best performing farmers. PAD is seen as a necessary step towards ASC certification (BOSMA AND VERDEGEM 2011; DUONG 2011; HOANG AND NGUYEN 2009). On the global level, the WWF is looking forward to labeling the very first aquaculture products with an ASC certificate in 2011 (WWF 2011), whereby Vietnam as the MoU between the Vietnamese government and the WWF has proven, is trying to achieve ASC labelling by 2015 in order to operate farms in a socially responsible manner and thus enhance community development and poverty reduction (BOSMA AND VERDEGEM 2011).

Apart from these mainstream certifications, niche certification schemes have a small foothold in the market. They focus on environmentally-friendly ecological products, for example those produced by Naturland, which certifies organic aquaculture, or by Butlers Choice, which labels its products as environmentally friendly and socially responsible farmed fish (BUSH ET AL. 2009).

Meanwhile, the Pangasius is exported to more than 100 countries worldwide. The industry deals with market access and the consumer demands of several markets – all demanding products following slightly different standards – which causes confusion among Vietnamese operators (FIS 24.12.2010). In the diverse and dynamic field of certification schemes in the Vietnamese Pangasius industry, farmers and especially processers have to adapt to new technologies, practices and forms of knowledge to maintain access to markets, where customers have become "the ultimate enforcers of the system, with independent certifiers playing a key role" (HAUFLER 2003, p. 238).

3.3 Summarising: environmental governance in transition?

Today, companies follow a broad variety of food safety, quality and hygiene measures as necessary steps for exporting their products. In contrast, certification schemes in the field of environmental governance have not yet been mainstreamed at processing sites, and much less so at farming sites, but are they recognised as an obligatory development in Pangasius farming, processing and export that will gain further importance in the future.

Thus, the Vietnamese Pangasius sector finds itself in transition – a process characterised by a gradual change from weak state legislation towards an external, non-state market and NGO-driven governance mechanisms. Such a shift in environmental governance is not easy to implement, as exemplified in the introduction to this paper with reference to the WWF case. By threatening to place a ban on all WWF activities in Vietnam, the NGO was successfully put under pressure by the Vietnamese government to undo the red-listing of the Pangasius (TAZ 2011). This either relativises the discussion about the loss of state sovereignty in favour of new market- and civil society-based actors, or it proves the persistent power of government in governance. Nevertheless, negotiations between both parties led to the agreement to jointly take care of the sustainable development of the Pangasius sector, but as long as the implementation of external environmental governance mechanisms does not evolve to a wider scope, state-driven governance, although considered weak, remains of high significance in temporarily contributing to the development of ecological sustainability in the Pangasius sector.

[7] The ISEAL Alliance is the global association for social and environmental standards.

4 The role of different capital in Pangasius farming and processing

So far, the state and international governance mechanisms have been presented and briefly explained. Introduced mechanisms have been installed to regulate the production quality of Pangasius. Since the mentioned mechanisms, especially those addressing environmental issues regarding production processes, have not yet come to full fruition, respectively missing their objectives, as exemplified in the introduction and in Section 3.1, it can be questioned whether the so far applied conceptualisation of environmental governance as a top-down approach is appropriate for addressing the problem in hand.

Thus, this chapter is aligned accordingly in order to establish where problems exist that cause difficulties regarding the implementation of 'good practices'. In this context 'good practices' refer to rules or value orders that lead to ecological sustainability in social-ecological systems. To operationalise this objective, the top-down perspective, as applied through the first chapters, is turned into a bottom-up viewpoint to study the processes involved in implementing standards and regulations from the perspective of fish farmers and fish processors. By adding a new perspective, the subject of governance is broadened in order to identify further institutions not only on the macro, but also on the meso and micro scales, such as kin relations, village communities, local norms or beliefs and potentially contesting state- and international-driven governance. A comparison of top-down and bottom-up institutions and their governance mechanisms enables the identification of weak spots and creates starting points on how and where to improve or better integrate the current governance mechanisms in place.

In the following, after a brief introduction about the applied methodology and a selected sample has been given, perspectives on state regulations and standards from fish farmers and fish processors are elaborated upon.

4.1 Methodology, Sample

The selected research sites are the Tan Loc commune and the Tra Noc industrial zone. The commune is located on a small island on the River Hau and belongs to Thot Not District, one of the nine districts of Can Tho City, where nine semi-structured interviews were conducted with Pangasius farmers. All of the interviewed farmers raise Pangasius that are later processed for export. The common water source utilised at all farming sites is surface water from the River Hau, as illustrated in Figure 1. The size of the farming sites varies greatly, from farmers cultivating in one pond up to farming sites with 25 ponds. The mean amount of ponds being cultivated per farming site is six. The surface area of the ponds varies between 2,000m^2 and 72,000m^2. Here, the mean lies at 21.000m^2 per farming site. Regardless of the size of the farming site, all farmers strive for two harvests per year and per pond.

The second research site, Tra Noc industrial park, is the main industrial zone and home to most Pangasius or seafood processing companies in Can Tho City. The four processing companies within this research are located within this zone, which is directly located along the River Hau and thus offers good logistic conditions, as also illustrated in Figure 1. The processing capacities of these companies vary between 2,500 tonnes per year and 500 tonnes per day. On average, each company employs 1,762 people, with a mean of about 775 employees. The oldest of the four companies was founded in 2004, the youngest in 2008. The fish and seafood processing companies in our study follow a broad range of national and international standards determining product quality such as 98/83 EC, SSOP, GMP, BRC, HACCP, HCCA, IFS, Halal, as well as ISO standards such as ISO/IEC 17025,

ISO 22000:2005, ISO 1000 and ISO 2000. Moreover, in the context of environmental governance and the impact of production processes, a few companies follow Global GAP certification and others are preparing to follow suit in the near future.

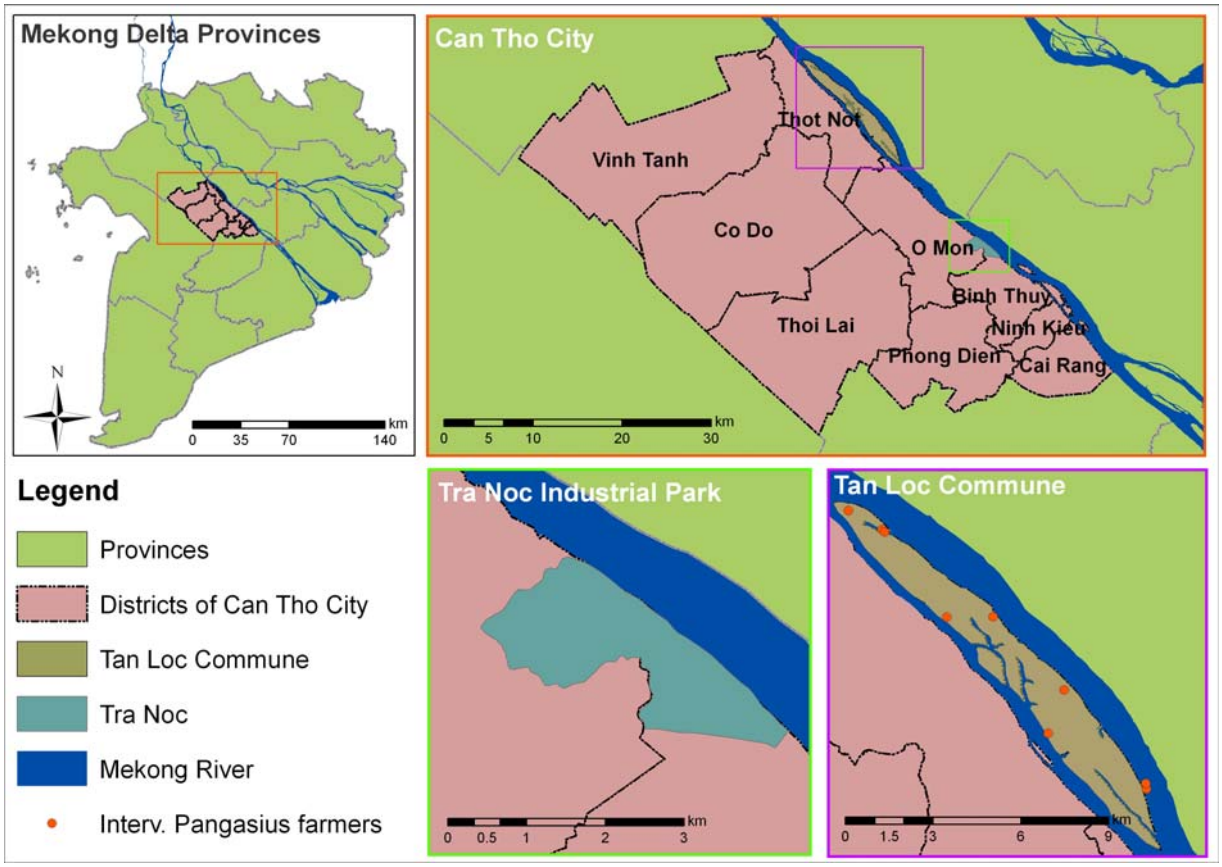

Figure 1: *Research sites in Can Tho City*

All of the interviews were aided by the interpretation of a Vietnamese assistant; therefore, listed quotations are translations. Moreover, as on occasion the Vietnamese Pangasius industry has felt offended by negative publicity, for example triggered by the WWF red-listing of Pangasius, establishing contacts with respective Pangasius processing companies was met with some reservations regarding information sharing.

4.2 Fish farmers' perspectives

4.2.1 Awareness

All of the interviewed farmers had heard about quality standards and regulations in Pangasius farming, but practical consequences varies strongly between different farming sites. Interviews conducted at farming sites at the Tan Loc Commune proved that most of the farmers did not follow any standards, while others saw quality as a demand or requirement for white fish meat free of antibiotic residues that are made and forwarded by Pangasius processing companies. A very few Pangasius farmers were preparing for their production according to the Global GAP certification standard.

It is difficult to argue that the environmental awareness of our interview partners was low, since awareness does not necessarily indicate or stimulate a certain type of behaviour (KOLLMUSS AND AGYEMAN 2002). From the perspective of Pangasius farmers, reasons for not complying are seen elsewhere, mainly due to economic constraints and not a lack of cultural capital.

4.2.2 Value-chain and micro-economic constraints

Even when actors know about standardisation processes and state regulations, the main factor limiting the implementation process remains economic capital. Economic capital, "which is immediately and directly convertible into money and may be institutionalized in the form of property rights" (Bourdieu 1986, p. 47), has various forms in Pangasius farming. It is not only available cash, often found in the form of loans, but it is also capital in the form of land, which may be needed to set up deposit ponds for waste water treatment.

In former times, farmers could get loans as investments in Pangasius farming far more easily compared to recent times, as it has now become difficult and thus impacts on raw material output (VIETNAM NEWS 12.03.2011). The market has become instable, especially regarding the development of raw material prices for Pangasius and increasing expenses for fish feed. This is due to the uncontrolled development of the Pangasius industry, where supply is not always driven by demand, or vice versa (VIETNAM NEWS 19.11.2010; VIETNAM NEWS 05.09.2009; VIETNAM NEWS 15.05.2008). The instability of the Pangasius market leads to a permanently changing volume of economic capital that is available and distributable among actors structuring the value chain, particularly economic capital. A high fluctuation in available capital offers limited security and leads to uncertainty in farming, so the process of instability offers a restricted margin of economic possibilities, especially for farmers.

Pangasius farmers see their personal economic situation as separate from processing companies, as they constitute their direct customers. Their situation or dependency can be linked theoretically to Bourdieu's "field of power", where the possession and relative value of capital brings agents into a position to dominate the corresponding field (1998, p. 34). Domination finds its expression, for example, in price negotiations and payment rates. LOC ET AL. (2010) calculated that Pangasius farmers hold the smallest stake in the Pangasius value chain, and PHAM THI AN (2010) further points out that this is partly due the tricky bargaining position of farmers, which is characterised by one-to-one relationships, where one farmer sells his fish to one company. She further compares the Pangasius case with shrimp farming, where raw material is collectively sold by many famers to one processor. Thus, the ratio of supplier and customer changes to many suppliers and one customer (x:1 relation, where x>1). By collectivising output, farmers increase their economic and symbolic capital to find themselves in a better bargaining situation. A collectivisation of output in the Pangasius sector is almost impossible, because the average amount of raw material harvested from a single pond of a size of 1ha can hit 200 tonnes. A pooling of output from many farmers would simply exceed the processing capacity of Pangasius processing companies (PHAM THI AN 2010). Consequently, Pangasius farmers themselves identify processing companies as the cause of many of the economic constraints they have to face.

Economic constraints are omnipresent for all Pangasius famers, but this needs to put into perspective. Operating out of a more balanced and secure economic situation, farmers owning or cultivating several ponds have more choices and means to consider not only recent developments in aquaculture, but also future scenarios. For example, the more ponds an actor in Pangasius farming is cultivating, the greater his ability becomes to compensate for any loss with revenue from the next crop. Out of an asset-backed situation individual motives and not so much economic constraints determine farming practices. Therefore, it is more likely that larger farming sites will invest in order

to comply with state regulations and production standards, as they are less economically constrained and thus have scope for action principally based on their motives.

Besides cash investment, farmers often lack land where they can set up facilities required by standards and state regulations. This structural lock-in is rooted in the unplanned und uncoordinated expansion of Pangasius farming, when regulations were set up after the boom.

Finally, out of this economically difficult situation, all Pangasius farmers are encouraged to invest in complying with requirements. At this point, any investment in Pangasius farming can be seen as an economic variable increasing the potentiality of a loss. As long as there are no incentives, such as higher or guaranteed prices for raw materials, it becomes rational for farmers not to invest. From the farmers' perspectives, these incentives are expected to be made by Pangasius processing companies in order to restructure the amount of available economic capital and enable all Pangasius farmers to adapt to current and future challenges.

4.2.3 Local institutions

Actors lack the necessary economic capital to comply with regulations, but they continue to practice farming activities and are spared from disciplinary actions such as fines or closure. How is this possible?

First, the enforcement of state regulations in aquaculture is perceived as weak, which is in line with the work of Nguyen (2010), which indicates that state regulations on water utilisation and environment play an important role, as they have not yet come to full fruition – as exemplified by the following quotation:

> *"If the state requires more and they do it stricter, we would be able to follow […]. Now, we still discharge waste water and mud directly to the river." (Farming site interview 009, Tan Loc commune, 02.12.2010)*

Second, the enforcement of regulations, especially at lower administrative level, must not be necessarily weak, but it simply follows its own institutions (KOH 2001; MUTZ AND KLUMP 2005). BELTON ET AL. (2011) describe the aquaculture sector as "embedded in informal relations with state bureaucracy", which enables farmers to follow business as usual. Similar structures can be identified through the interviews conducted with Pangasius farmers in Tan Loc commune, too.

Relationships between state officers and farmers, as a created form of social capital, are defined as "…capital, made up of social obligations ('connections'), which is convertible, in certain conditions, into economic capital…" (Bourdieu 1986, p. 47), which enable farmers to continue farming without any consequences, as the following quotations shows:

> "*[…] usually I am not allowed to dig a pond without having a deposit pond, so I dig it without permission. When I called the land management officer and commune police to change my land use registration to aquaculture, he wanted me to pay a fine for not noticing the ponds to the state. But I actually didn´t pay the fine. […]I have no money to pay a fine and I have to support my family. I don´t do an illegal thing and therefore I don´t pay a fine. Now, everything goes as always.*" *(Farming site interview 001, Tan Loc commune, 22.11.2010)*

The closeness of actors about the farmer´s personal faith of losing his livelihood can be assumed as stronger than the officers' job attachment. Due to the closeness of actors, common moral institutions are shared that reap benefits for both actor groups. On the one hand farmers save economic capital, as they can continue with their business and do not have to pay fines, while on the

other hand officers gain symbolic capital from farmers, and just as likely from their families and the local community, as they show loyalty towards local institutions. Thus, top-down governance mechanisms are contested by local institutions, i.e. moral norms.

Social interaction and the acceptance of local institutions can be characterised as implicitness for actors, as highlighted by the following quotation:

> *"[…] the state cannot come to make me have more difficulties." (Farming site interview 001, Tan Loc commune, 22.11.2010)*

Farmers seem to understand the state as an institution of support that cannot cause additional complications in already tough times. Farmers expect from the Vietnamese state what was promised as a socialist institution, working for the well-being of its people.

4.3 Fish processors' perspectives

4.3.1 Competition

From the perspective of Vietnamese Pangasius processors, the aspect of profitable production is central because Vietnam follows a strategy of promoting its fish as high quality but cheap (NGUYEN 2011). Thus, the price of Pangasius is becoming the central competitive advantage of the Vietnamese Pangasius industry:

> *"The US would like to make 68% profit when selling, while 5% of profit is also acceptable for Vietnamese enterprises. Therefore, US enterprises have no chance to sell to other markets." (Processing site interview, Thien Ma Company, 07.07.2010)*

The implementation of product quality standards requires changes in production processes followed by an increase in production costs and additional staff wages. Increasing costs limits profit, as long as there is no additional benefit to applying new standards. In the context of standards addressing production quality, it is assumed that, for example, Global GAP certified products are sold at a 20% higher price than non-certified products (Duong 2011). Nevertheless, most companies still see quality management-related investment costs as major challenges, since no market advantages of applying standards have yet been seen.

Thus, economic capital is becoming the most limiting factor regarding the implementation and observance of new quality and production standards. The need to keep production costs low, however, contributes to a reserve in terms of investments and stimulates companies to find alternative ways to cut expenses, and therefore increase competition, as illustrated in the following.

4.3.2 Informal strategies to increase competiveness

Moral hazard

Environmental protection is considered as something of which that the state and not the processing company has to take care. Actors themselves have not yet balanced the relationship between economic and ecological demands in production processes, and the current system of monitoring does not force them to do so. Thus, as companies see their responsibility lying in the creation of profit and employment, environmental pollution is taken as an externality in favour of their responsibility and to increase competition.

Actors seem to be able to properly assess the situation about the environmental impact of Pangasius processing companies, but faults and offenses always lie with other actors. Moreover, knowing that compliance checks are carried out infrequently, it is plausible that actors will take the risk of being caught once a while, for example by the environmental police, and to pay a fine, which is lower than the costs involved in waste water treatment. In cases of abuses, actors usually deny any responsibility. Guilt is the last link in the chain. The responsibility of higher management is not taken into consideration and the solution is often seen as the simple replacement of workers. This type of response addresses the effect, but not the reasons leading to abuses.

Picture: Untreated waste water discharge at a processing site.
Source: Author

Corruption

The implementation of standards can only deliver benefits as long as they are enforced on a regular basis and monitored conscientiously. Environmental monitoring has improved during the last years, since several state offices carrying out environmental monitoring-related tasks have been introduced, such as the National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD 6), the Department of Natural Resources and Environment (DONRE) and the Environmental Police. The establishment of new departments, as well as personnel changes in executive positions, has also contributed to the mentioned improvement. The point that changes in state operations are assumed with the replacement of agents in certain positions allows one to proffer the hypothesis that new agents have different levels of awareness and knowledge of their field of responsibility, as forms of incorporated cultural capital, and secondly the agents' embeddedness in local social networks is low and thus potential social capital in the respective field is low, too.

Although the situation is continuously improving, the implementation and especially enforcement of top-down governance mechanisms are still limited. In the context of waste water treatment at processing sites, representing an essential part of the general requirements of standards and regulations in production processes, companies closely 'cooperate' with state and police officers to get to know the dates of upcoming inspections. Thus, relationships between processing companies and state management, as a form of social capital, bring both parties involved a benefit in terms of economic capital. Processing companies are able to save production costs and additionally circumvent fines as potential outcomes of inspections and any violations of the law. At the same time, officers convert their institutionalised cultural (political) capital directly into economic capital. Through these corruptive structures and practices, top-down governance mechanisms are once again disabled.

Further research is needed to work on the hypothesis whether a state officer's practice is initialised by a lack of cultural capital, a lack of awareness about his position and responsibility or by a lack of economic capital forcing him to make use of social and institutionalised cultural (political) capital to aggregate new economic capital.

4.4 Summary

Besides economic constraints as limiting factors for complying with standards and regulations, both presented cases show that practices in farming and at the processing sites are partly governed by local institutions such as moral norms or corruption. Local institutions are of enormous importance, as they have shown their potential to contest with governance mechanisms set up on higher administrative levels.

5 Conclusion

Environmental governance in the Vietnamese Pangasius sector is a combination of externally driven governance systems, most commonly in the form of certification schemes, and inherent state regulations. Because state regulations are considered weak, the decision to follow external governance mechanisms, specifically certification schemes, in order to build a competitive image of Pangasius, was taken by the Vietnamese government. Quality assurance is thus ensured by following external, third-party certification schemes, which also strengthen the image of the fish.

A rising number of markets and independent actors, such as NGOs, interested in the Vietnamese Pangasius are followed up by an increasing set of requirements, which have changed their character over time. From solely addressing product quality, new certification schemes address demanding production changes towards sustainability in the guise of ecological sustainability. Changing production techniques at farm and company sites causes higher costs that have not yet been covered by economic incentives or compensation.

However, the price pressure in the Pangasius sector is partly self-induced, as trying to find a competitive advantage in international markets by selling Pangasius at a low price, increasing requirements for farmers and processing companies reinforce economic constraints additionally as long as the Pangasius price has not been marked-up accordingly. Consequently, for farmers as well as for processing companies, difficulties regarding the implementation and observance of environmental governance mechanisms in the form of certification schemes and state regulations promoting ecological sustainability are primarily driven by economic constraints.

Holding a smaller stake in the Pangasius value chain, farmers suffer more than processing companies. A restructuring of the available capital volume in the economic field of Pangasius could lead to a fair share of the value chain, which is needed to place all Pangasius farmers in a position to meet the demands of state regulations and certification requirements. Recent competitiveness in the Pangasius sector has impacted on the expenses of small-scale Pangasius farmers. As long as processing companies depend on the raw material produced by Pangasius farmers, all actors within the sector have to be recognised as essential elements that contribute to the preservation of Pangasius aquaculture, or as Bourdieu states:

> *"[…] the symbolic work of constitution or consecration that is necessary to create a unified group is all the more likely to succeed if the social agents on which it is exerted are more inclined, because of their proximity in the space of social positions and also because of the dispositions and interests associated with those positions, to mutually recognize each other and recognize themselves in the same project." (1998, p. 33)*

Through awareness building and knowledge sharing, the cultural capital of actors could be strengthened as actors realise the need for solidarity to enable a long term success. Once Pangasius products are proven to be more sustainable, and therefore of higher symbolic capital, the Vietnamese sector can try to achieve an added economic value by selling products at a reasonable price.

Besides the importance of economic capital for Pangasius farming and processing, social capital is of tremendous significance. Actors in the Pangasius sector are able to convert social capital into economic capital, as aquaculture is embedded within state bureaucracy. Being embedded in a network of relationships and acquaintances widens actors' economic horizons and generally enables

them to continue with farming and processing activities. Relationships are grounded on local institutions, formed by norms or corruption.

Consequently, any constraints in economic capital are compensated for and negative externalities towards the environment are accepted, while national and international institutions with top-down governance mechanisms are contested successfully. Nevertheless, with an increase of external, non-state governance mechanisms and the stricter enforcement of regulations in the future, it can be assumed that state sovereignty at lower administrative levels will continue to decrease, and thus social capital will be of limited value and no longer convertible into economic capital, because the institutionalised cultural capital of local state officers will become less relevant in the Pangasius sector. Such a development might boost the image of the Vietnamese Pangasius, as it promotes ecological sustainability, but at the same time it will heap economic constraints on actors already prone to economic instability and uncertainty.

It would be interesting to follow up the Vietnamese strategy on how to comply with environmental governance and ecological sustainability in the Pangasius sector. Apparently, Pangasius farming and processing are not yet negatively prone to a self-created environmental impact. Thus, it can be assumed that as long as fish output – and thus economic growth – is not endangered by changes in ecology, the Vietnamese state will not (be able to) restrict the current development of the Pangasius sector, which has become important for Vietnam's export operations and for rural development in the Mekong Delta.

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