

Observing Institutional Adaptation to Global Environmental Change in Coastal Vietnam

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1 Introduction

This paper examines institutional adaptation surrounding collective security from present climate extremes. A case study is presented in Nam Dinh Province, northern Vietnam, highlighting common themes from the restructuring of ownership and control of coastal resources throughout Vietnam's coastal Provinces and Delta regions. The study demonstrates that reduction of locally organised collective action for coastal defence and water management has been undermined by decollectivisation and the reduction of importance of agricultural co-operatives. Offsetting these trends, informal collective action, as manifestations of civil society, have contributed to reducing the overall increase in vulnerability to external environmental change.

Following a discussion of the role of institutional structure in determining social vulnerability to environmental change, this paper sets out empirical observations of institutional adaptation in Nam Dinh Province. Features of the recent historical evolution of collective action on hazards in Nam Dinh include the hierarchical operation of local and regional central planning under collectivised agriculture in the communist era; the inertia of this system in the light of both liberalisation and of changing environmental pressures; and concurrent institutional adaptation to cultural and political-economic factors within the District. The local level formal government institutions have, over the past three decades, acted as the facilitator for collective action to ameliorate the impacts of climate extremes and hazards. In the most recent five years under Doi Moi reforms, significant retrenchments of the government institutions have occurred, which essentially have decreased the importance of collective action and hence are shown to have enhanced vulnerability. The major reason for this is the concentration of resources and power in the coastal Communes.

Following the viewpoint that perceptions of vulnerability are primary determinants of political action, the perceptions of vulnerability are elucidated for individuals experiencing this risk. The role of institutions and culture in framing perceptions of vulnerability is therefore also addressed. Households perceive increasing risk because of the trend towards atomised decision-making felt by some disempowered households. In particular the legal framework which has changed the rights to

property; the rapid economic growth in the Red River Delta; and the associated migration and remittances have all influenced the type of institutional changes which have occurred.

Data on the storm protection system in Xuan Thuy are presented, leading to an assessment of how Commune and higher level institutions seek to legitimise and retain their power over resource allocation, while concurrently implementing adaptation to the evolving social and physical environment. A number of 'core' Communes act within the District to retain political influence and determine actual resource allocation away from 'peripheral' inland Communes through the medium of coastal protection expenditure. As demonstrated by the empirical evidence from Xuan Thuy District, the short term goals of maintaining political power, as well as non-decision-making by bureaucracies, are important institutional causes of collective vulnerability.

2 Theories of Institutional Adaptation

2.1 Institutions and paradigms

There is no single theory of institutional adaptation to environmental change. Institutional economists and political scientists are concerned with institutions, and set institutional change at the centre of both economic as well as non-economic, political and social structures. Various approaches within political science reject the conception of political action based on institutions merely acting in self-interest and having clearly defined goals (see North, 1990; March and Olsen, 1996 for reviews). International relations scholars, by contrast, examine trans-national environmental agreements often hypothesising that nation states act as self-interested agents in such arenas, but that both bureaucratic, informational and other constraints lead them to deviate from the ideal agreement. Part of the problem in then defining a theory of institutional adaptation is in defining what an institution is. The term is clearly an essentially contested concept:

‘applying both to structures of power and relationships as made manifest by organisations with leaders, memberships or clients, resources and knowledge and to socialised ways of looking at the world as shaped by communication, information transfer and the pattern of status and association’ (Jordan and O’Riordan, 1995, p.1).

The relevant institutional types associated with action in such areas as collective security, the environment and resource allocation, are those of state, market and civil organisations. These can be contrasted by their mechanisms: states enforce by regulation or threat; markets convey price signals as incentives; and civil organisations are based on bargaining, co-operation and persuasion (de Janvry et al., 1993).

The study of the political processes surrounding environmental change involves examining a wide range of characteristics and also requires a wide range of aspects of contemporary social theory. As reviewed by O’Riordan et al. (1998), these include insights from international relations (institutions as international regimes) and from comparative politics (institutions as national policy styles). This study concentrates on examining the influence of sub-national formal political institutions and informal associations and cultural norms on collective security and vulnerability to a set of local exogenous environmental change. Environmental change is essentially mediated and mitigated through individual and collective (institutional) actions (see for example Sanderson, 1994). Thus the study of institutional adaptation in the context of climate extremes in Xuan Thuy deals with institutions as structures of political power and legitimacy and institutions as pre-determined social commitments and world-views, characteristics which can be both overlapping and in conflict.

2.2 Institutions as structures of political power and legitimacy

Institutions embody and reinforce power relationships and their legitimacy in order to maintain the status quo position and privilege of the dominant. Whether this is seen as the 'purpose' of institutions or whether it is simply the 'outcome' of the institutional process depends on paradigm underlying the analysis of such institutions, but represents a central defining characteristic of institutions. Power relationships inherent in political institutions can be either legitimate or illegitimate. The greater the legitimacy of the power which institutions exert, the greater the likelihood of such power being sustained over time. Beetham (1991) hypothesises that legitimacy depends on the extent to which institutional power conforms to established rules; whether these rules are justifiable by reference to the views shared by both the dominant and the subordinate; and whether there is evidence of consent from the subordinate partner. This latter concept can be particularly problematic in that consent to political power does not necessarily involve each subordinate individual, and is a culturally specific matter. Consent to colonial institutional structures in the first half of the 20th century in Vietnam, for example, was withdrawn by landlords and skilled labourers, as part of the 'Popular Front' (Wiegersma, 1988), signifying that, in that context, only a subset of society was 'qualified to give consent' (Beetham, 1991, p.19).

In the context of the present institutional structure outlined in the sections below, post-1975 rural northern Vietnam exhibits hierarchical one-party local government structures, but with legitimacy springing from shared nationalism and shared beliefs, as well as from a recognisable general goal in materialist oriented rural development (see Jamieson, 1993). The key question from this characteristic of institutions (namely that they maximise their power and legitimacy), is how adaptation forms part of strategies to retain legitimacy when the rules or belief systems have evolved over time.

Processes by which institutions reinforce legitimacy include elements of decision-making and of non-decision making and agenda setting (Bachrach and Baratz, 1970). Thus, institutions are self-perpetuating phenomena focusing their resources on their own continued operation through the economics of rent-seeking activities. In economic analysis, the phenomenon of allocation of rights to resources by formal institutions allows the capture of 'rents' by institutions whereby the allocators of rights expand their own bureaucracies and secure benefits for themselves. The phenomenon of rent seeking explains how institutions take decisions on resource allocation which enable them to expand influence. Political scientists, have however, widened this focus to examine the process which prevents issues from becoming 'political', thereby not even entering the domain of resource allocation. This is known as 'non-decision making' and is by its nature not always purposive but rather happens in many instances by default. Whether deliberate or otherwise, non-decision-making is frequently observed for the most critical issues which 'involve a genuine challenge to the resources of power or authority of those who currently dominate the processes by which policy outputs in the system are determined' (Bachrach and Baratz, 1970, p.47). Non decision-making can be carried out both by appeal to cultural norms, and by promotion of less important issues into the agenda of the institution.

If institutions in general exhibit this characteristic of making the political playing field uneven, then how does institutional adaptation come about? Institutions shift their priorities to retain legitimacy as the key mechanism of adaptation: this may be brought about by both public demands and changing political environments. However, the demand for such adaptation might never come about: the demand is predicated on the 'basic assumption that individuals and pressure groups know what they want and articulate those demands through the political process' (Jordan and

O’Riordan, 1995, p.16). The empirical evidence from Xuan Thuy’s Communes. These clearly show how a ‘core’ of Communes act within the District to retain political influence, and determine actual resource allocation away from ‘peripheral’ inland Communes through the medium of coastal protection expenditure.

2.3 Institutions as pre-determined social commitments and world views.

As well as exhibiting the observable traits of maximising legitimacy and power institutions also exhibit prior commitments to accepted goals which embody the core values and established patterns of behaviour. Such phenomena are relatively easily to identify, but it is difficult to attribute actual institutional behaviour to such pre-determined worldviews.

In the context of the study here, it is important to examine whether the worldviews underlying the institutions affecting social vulnerability allow flexible adaptation to environmental change, or whether deeply held worldviews inhibit adaptation and hence enhance social vulnerability. The communist and Confucianist discourses which have dominated resource use and social development in northern Vietnam in the past decades adopt technocentric and materialist views of environment and development (Jamieson, 1993). As Martinez-Alier (1987, pp.218-224) has commented, Marxist economics treats natural resources in a manner akin to Ricardo: the natural environment is only important insofar as it produces resources for ownership and generates rents within the economic structure.

The concept of a ‘dominant worldview’ applied to Commune level institutions in Vietnam is not necessarily meaningful, because institutions themselves are not pre-cast nor operating to a single objective; and because of the plethora of inter-locking social, economic and cultural influences on such institutions. Understanding the themes and issues underpinning the worldviews of institutions requires knowledge of their evolution. The competing and overlapping belief systems of Confucianism, peasant-led Communism, market liberalisation, and nationalism pre-exist in the institutions of governance in Vietnam, and all play their part in both routine decision-making and in the setting of political agendas.

The critical aspect of the Marxist worldview in the context of the District level institutions in Vietnam, is how these prior commitments interact with views of a hazardous physical environment, and hence incorporate risk into decision-making. On the face of it, hierarchical social and political structures by their nature are not prone to be flexible, as demonstrated the explanations of why communist collapsed (in the western world it must be stressed) in the late 1980s:

‘The unwillingness to accept difference, and the lack of any institutionalisation of the means of expression of effective difference, or alternative strategies, has sealed into place a rigid structure that carries within it little potential for constructive renewal’ (Slater, 1995, p.73).

However, as discussed by Fforde and de Vylder (1996) and others, the rural institutional structures of Vietnam has survived in a one-party communist system into the 1990s and hence have demonstrated flexibility in decision-making. The economies of China and Vietnam have provided backing for the argument by Schlack (1996), which he calls ‘somewhat unsettling and heretical’, that the formal political and legal institutional structures for consensual and participatory democracy are not a necessary condition for successful *economic* transition to market capitalism. These issues are examined in the following sections.

Cultural attitudes are an important element in framing worldviews and in determining the focus and structure of social institutions. In Vietnam in the sometimes conflicting cultural trends in Confucianism and communism. In addition, perceptions of the external world and perceptions of risk and vulnerability form a central element in understanding institutional change. As Cantor and Rayner (1994) state: 'human perceptions and cultural attitudes are ... primary determinants of political action' (Cantor and Rayner, 1994, p.69).

Studying perception, rather than the physical phenomena leading to the vulnerability, is fundamentally deciding *what* is perceived to be vulnerable and what is threatening. In other words, analysis of perceptions of vulnerability elicits how individuals and groups rank the objects of vulnerability. Some agents will focus on the vulnerability of the economy, some on the vulnerability of nature and some on the vulnerability of people to external shocks. The observed perception of the object of vulnerability is determined by the structure of the political hierarchy. There are parallels in perceptions of vulnerability to perceptions of risk more generally. Perception of risk encompasses the interaction of judgement, preference, opinion, attitude, communication, decision, choice, acceptance, action, and management as well as cognition, though separating these issues within risk perception is a major empirical challenge. The cultural and institutional setting essentially selects risks or suppresses them such that the manageable risks which resonate with worldviews and cultures come to the fore.

These various elements of institutional characteristics and behaviour form a complex picture of the political, social and cultural context in which all the facets of social vulnerability are constituted. Institutional analysis can be used to examine and explain manifestations of the political economy of social vulnerability. But institutional analysis is further required to demonstrate the endogenous role of the institutions themselves in causing vulnerability at the collective level and the potential for alleviation of vulnerability through institutional adaptation. The most important facet of institutional adaptation to environmental change is the structure of power relationships in determining decision and non-decision-making. This translates into adaptation and inertia which are observable indicators at different levels within institutional hierarchies.

3 Institutional Inertia and Adaptation in Xuan Thuy Observed

3.1 Collecting Data to Analyse Institutional Adaptation

Collective vulnerability to extreme climate events is tempered through an elaborate system of social institutions from the formal Commune and District level government to an informal moral economy of reciprocal arrangements and networks. The District and Commune authorities operate a tax-funded system of activities to mitigate the impacts of storms. These include work brigades to repair and maintain the dike system and the mobilisation of Province level labour and resources when floods or widespread damage occurs.

Every one of the 70,000 households in Xuan Thuy is affected in some way or another by the annual storm season. This is because of the District's physical proximity to the coast and the necessity to maintain physical infrastructure necessary for collective protection from storm impacts. At one extreme, some households are affected only through local taxation to maintain the system of sea dikes for coastal protection. At the other extreme, some households have experienced the death of family members through the impacts of severe storms and floods.

Data for analysis of institutional adaptation and of institutional inertia in the treatment of present climate extremes in Xuan Thuy District are collected through empirical observation of Commune level officials and from households within these Communes, as well as discussions at the District

level. The data was collected through semi-structured interviews with Commune officials in eleven Communes in Xuan Thuy and with households within those Communes in April and May 1996, named in Figure 1. The survey strategy for this part of the research is therefore based on a mixture of key informants, for the trends in social institutions; and of comprehensive quantitative and qualitative information for the coastal dike maintenance system. Informants at the Commune level tended to be Village Committee Chairs or Vice-Chairs, or the manager of the Commune agricultural co-operative. This strategy aims to produce qualitative data on Commune level institutional practices; on household level adaptation; and underlying views on the hazardous nature of the physical environment.

The qualitative household survey was carried out in the spring months as this was the end of the period of allocation of labour for dike maintenance for that year. The maintenance takes place in the spring after the winter monsoon following the transplantation of the first rice crop and before the storm season, which normally starts in July. This period is therefore dry enough to allow work on the dikes, and is a relatively slack agricultural season for most of the Communes, as well as just before the start of the salt-making season. The timing of the survey therefore ensured the shortest recall period, with most households involved directly in dike maintenance, some having completed their allocation in the previous week. An accurate picture of resource allocation for the spring 1996 season was therefore elicited.

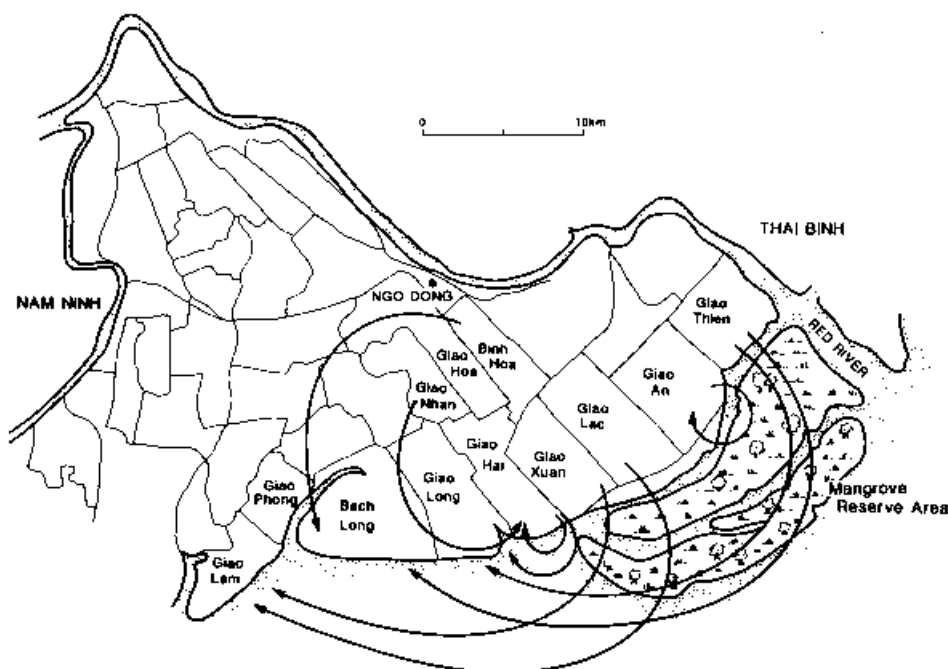
Within such research the validity of prestigious informants as ‘scientific’ and of non-prestigious informants and folk analysis is a critical issue. For example, Commune level officials in different parts of the District exhibit diversity in perceptions of the influence of climatic changes on sea dike maintenance and salt making, as do the folk histories of climatic extremes, ranging from benign (fewer storms) to harmful (greater rainfall and less sunshine for salt-making). Received wisdom on weather, as observed in all societies, is made up of interpretations of scientific authorities, such as in the media (radio broadcasts); local indigenous knowledge; and traditional beliefs. But Chambers (1983) has argued that the rejection of folk knowledge in favour of scientific knowledge is structured by the power relationships between experts and non-experts. In the case examined by Chambers (1983) the folk knowledge of weather and agricultural practices of African farmers was rejected because of the power relations between locals and colonial scientists. Whatever the scientific knowledge behind the perceived climate change observations, they illustrate that the climate itself and its social construction are both entities which are independent of each other (Stehr and von Storch, 1995). The statements graphically illustrate that the perceptions of vulnerability are culturally embedded and determine the collective and institutional responses to risk (Cantor and Rayner, 1994).

3.2 Storm protection politics

This section utilises the data to examine the institutional adaptation to the impacts of changing perceptions of hazard and of external political and economic forces which are driving changes in coastal hazards and protection systems in Xuan Thuy District. The District level institutions are responsible for protection from coastal storms, primarily through a series of sea and river dikes in the south and eastern boundaries of the District under their control (see Figure 1). However the threat and the cost of the threat of coastal hazards is both differentiated and diverse. Firstly the Communes of Xuan Thuy face different threats. The Communes of Giao Hai and Bach Long (Figure 1) are presently experiencing erosion and loss of land. Their two tier dike system involves a secondary dike inland from the main sea dike, but the Commune authorities of Giao Hai are already planning the abandonment of almost 15 percent of the Commune’s agricultural land. The whole District is impacted by severe coastal storms and typhoons. The coastline of

Vietnam, which extends for 3000 km experiences a mean rate of landfall typhoons of approximately five over the last century, though it is projected that the typhoon regime will change in both intensity, frequency and seasonality with global climatic change.

Figure 1 Flows of labour resources for sea dike maintenance, Xuan Thuy, 1996



Given these threats and uncertainty over future impacts of typhoons, the District Irrigation Committee establishes the need for dike repairs and maintenance throughout the District and decides on priorities for expenditure. It is this system which embodies the conflict between economic liberalisation and collective security. Communes employ a variety of strategies for use of the revenue they raise for storm protection. The differentiation in use is dependent primarily on their geographic location in that coastal Communes have the sea dikes within their jurisdiction. Communes next to each other also inevitably have long-standing social reciprocity with their neighbours. The Communes also have rather different profiles of impacts of storms and have different opportunities to use surplus labour for dike protection.

The Village Council raises the following ‘hypothecated’ resources within the commune for dike protection with two major features. Firstly, taxes are raised, to the level of 40 kg of rice equivalent, VND 70,000, or 10 day labour day equivalents, based on the number of eligible workers in each household. All male workers between 18 and 45 years old and all females 18 to 25 years old are eligible for this tax. The tax is District wide and supports both temporary work brigades and hired groups of workers drawn from the District who take on this labouring task as seasonal employment. Secondly, a labour force is constituted for maintenance during the months of March to May after the first rice crop has been transplanted. This workforce is a subset of the total eligible adults and complements the paid work brigades. In reality, not all eligible adults are called in any year, with the workforce determined by the extent of storm damage. In storm years all labour aged people are expected to carry out emergency repairs. In 1986, these lasted for over one month for a large section of the available population.

Table 1 Historical impact of previous storms and flows of resources for eleven Communes, Xuan Thuy (source: field survey)

Commune	Last major storm	Damage incurred from 1986 coastal storm	Storm impact deaths	Support to/from Communes in that year	Assistance in 1996
<i>Inland Communes</i>					
Binh Hoa	1986	Houses damaged by wind.	2	Provided assistance in 1986 to coastal Communes.	Labour to Bach Long.
Giao Nhan	1986		0		Labour to Bach Long and Giao Hai.
<i>Coastal Communes</i>					
Giao Thien	1983	40% of houses damaged, little flooding, but 30% of dikes badly damaged.	5	No labour received but exempted due to own losses. Limited financial assistance from District.	Labour to Bach Long and Giao Long.
Giao An	1986	2 km of dike destroyed. 1992 also a major storm but impacted only on individuals.	2	None	No assistance contributed, but raised extra 5 days tax for own repairs.
Giao Lac	1986	Primarily wind damage of buildings.	1	Assistance to Giao Lam, Bach Long and Giao Xuan. Received District assistance.	Labour to Bach Long in 1995 and Giao Lam, 1996.
Giao Xuan	1986	40% of houses damaged mainly by wind. Also resulted in abandoning dike enhancement plan.	2	Assisted Giao Hai and Bach Long	Used only own labour within the Commune. Labour to Giao Lam.
Giao Hai	1986	30% of second rice crop destroyed	0	None	Used only own labour within the Commune.
Giao Long	1986	50% of housing stock damaged. (1992 storm caused breach of 500m of dike).	2-5	Assisted Giao Hai and Giao Nhan in 1986 (also in 1995)	Used only own labour within the Commune.
Bach Long	1989	Major dike loss.	0	Support from many Communes (4000 labour days)	Used only own labour within the Commune.
Giao Lam	1986	Salt production was major economic loss (6-7000 tonnes)	0	No support in 1986 from Communes. Received financial support from District.	
Giao Phong	1986	Relatively moderate impacts on all economic activities (salt-making, agriculture, fishing).	5	No assistance received	About 4500 labour days to Bach Long.

The tax and the contribution of labour are alternative means of payment for most people in the District. However, in practice only coastal dwellers actually contribute their labour. The 'tax' system represents the latest evolution of the shift to household responsibility as a necessary outcome of the privatisation process and has regressive distributional impacts. Households perceive all charges levied by the Commune or the co-operative as the overall 'tax', where in effect some are user fees and some property and land taxes, some are general taxes and some are earmarked for specific purposes. The dike maintenance tax is an earmarked head tax, but is simply perceived as part of the general tax burden by Xuan Thuy householders.

Table 1 summarises data collected during interviews with officials in 11 Communes in order to gain insight into the actual workings of a system under stress. These illustrate the historic differential impacts of storms, and the diversity of coping strategies, as well as their flows of resources in the dike maintenance season of 1996. Table 1 shows where the Communes involved in coastal protection allocated labour resources in 1996. No Communes from further inland were involved in labour allocation in 1996, though this situation is reversed in years when significant storms occur. Figure 1 shows the flow of labour associated with the annual expenditure on sea dike maintenance in the 11 Communes sampled in the spring of 1996. The resource flows show that collective maintenance of the dikes is an ongoing element of hazard mitigation, within these Communes. The resources flows in Figure 1 also demonstrate the tendency for Communes to maximise their own individual interests, through capturing the greatest share of District resources. This is facilitated in the coastal Communes by flows of resources being of actual labour, rather than funds.

Allocating their own labour to dike repair ensures that the coastal Communes limit their input into the system, particularly in years where few repairs are required and avoid paying monetary resources to the District government. In the dike protection season following a year with little storm damage, such as 1995, those Communes who do not directly allocate labour (the inland Communes) still have to pay full tax rates. By contrast, in those years with little storm damage, the coastal Communes can simply undertake their own repairs.

Further, the 'hypothecated' tax collected by the District government is not spent annually solely on coastal protection: the tax actually collected is at least four times that spent on coastal protection in years such as 1996. Indeed, the rich coastal Communes receive a 'double dividend' of paying lower effective tax rate than inland Communes, along with receiving disproportionate investment in other infrastructure projects. In effect, the coastal Communes are creating a 'core' of powerful Communes which capture District level resources, to the detriment of 'peripheral' inland Communes.

Such actions, along with non-consultation with the District Irrigation Committee, constitute non-decision-making which keeps the political playing field tilted in favour of the coastal Communes. Furthermore, some Commune level officials appeal to the locally held perceptions that storm impact is a major constraint on economic performance. Hence, they argue that it is legitimate, as a reflection of local knowledge, to maintain tax collection for sea dike maintenance. When it is convenient to downplay potential storm impacts and other environmental change, however, the officials of the coastal Communes do so. When Commune officials wish to promote economic growth to the exclusion of other policy objectives they trivialise hazard mitigation.

3.3 Adaptation of the coastal protection system

Notwithstanding the inertia found in the coastal protection system, several features exhibit evidence of flexible adaptation, mirroring the continued predominance of the institutions of the Communist Party at the national level. It is argued that the flexibility in parts of the system is itself primarily due to the diminished role of collective government. The sea dike protection system has become more professionalised and Communes with special needs can raise further funds autonomously.

Since the flow of resources, particularly from inland Communes has become monetised in the last decade, so the process of dike maintenance has in general become professionalised through the hiring of specialised labour teams. The perception by Commune officials, particularly those from inland Communes, that less overall maintenance is being carried out is partly explained by this trend. It is primarily the result of the higher opportunity cost of time for agricultural labour and the liberalisation of the labour allocation system. A second adaptive trend is the further autonomy of some progressive Communes in raising additional taxes tied to both dike maintenance and to general infrastructure development. Giao An Commune, for example, in 1996 added 50 percent to the District-wide 10 day equivalent dike maintenance charge. This local tax was levied for local infrastructure associated with the dike, but invested in an access road to the coastal aquaculture area. Other Communes have introduced credit systems, where households can transfer their commitments on dike maintenance to the following year if they have critical labour or cash shortages at the time. This system of tax credit normally happens only in years of extreme impacts and reflects some aspects of increased autonomy at the Commune level.

In summary, the dike protection system of Xuan Thuy provides insights into hazard mitigation and institutional adaptation to social and environmental change. The Communes essentially use the sea dike resource allocation system to maximise their own budgets, often through unaccountable actions through which the collective vulnerability to the impacts of storms may be increased. At the same time, the system is adapting to the increasing specialisation of labour and higher opportunity costs of time for households, who can no longer afford to spend time on labour intensive actions.

3.4 Informal institutional changes to enhance security

The dike protection system is only one aspect of the radical institutional changes observable in Xuan Thuy, many of which may be reducing the potential vulnerability of the population to extreme climatic events. Many of the institutional changes are part of the economic transition process, though these changes are underpinned by attitudes towards the subjective riskiness of the environment. The crucial factor in terms of perception of risk, is that a severe storm (with widespread damage on a District-wide basis) has not occurred since 1986.

The private property resolutions of the 1992 Constitution, and the subsequent reform of the land allocation system under the 1993 Land Law, have been paralleled by a relaxation in the legality of private credit systems in rural areas. In the collectivised period, formal credit was only permissible through the Commune co-operative (Luong, 1992, p.184). Yet even in that period, private credit did operate and played an important role in coping strategies in Xuan Thuy, for example after the storm impact of August 1985. The extent of the credit, and the importance of its existence in such circumstances was underlined by one rich householder in Binh Hoa:

‘I currently lend to other families and to the village Co-operative, in total about 40 households. ... In 1986 I gave credit to the Co-operative and to families, about 50 kg rice to each household and about one tonne of rice to the village. I had excess food that year and many friends in the village. My family didn’t work on repairing the dikes that year as

my sons were too young, my father too old, and I was invalided from the army. So I wasn't too worried about losing money, more about helping the village'.

Informal credit systems have been an integral part of the coastal fishing economy in Xuan Thuy, common to many artisanal fishing communities. Street Associations are informal associations of neighbours within hamlets who have traditionally maintained local pagodas and other communal resources, as well as participating in funeral and marriage ceremonies. These institutions were largely inoperative during the collectivised period, or were co-opted as Communist Party affiliated organisations. Associations, along with reciprocal feasting and gift-exchange have become revitalised in Xuan Thuy, with Hy Van Luong (1993 pp.270-284) observing that these processes in northern Vietnam play a role in sustaining kinship and lineage ties which are necessary for security in times of crisis.

Land reform is the most significant institutional changes affecting livelihoods. Use rights in land are presently distributed by the agricultural co-operative at the Commune level, with leaseholds of 15-20 years in Xuan Thuy. This system has only been in place since the new Land Act of 1993 which superseded Decree No. 10 of 1988. The initiation of land reform in Vietnam in 1981 coincided with the development of the output-contract system, though the allocation of use rights to land on the basis of labour availability was somewhat weakened, in its impact on poverty reduction and capital accumulation, by economic instability and high inflation through the mid-1980s (Fforde and de Vylder, 1996).

The present land allocation system, following the legislation of 1988 and 1993, is fundamentally different from what has gone before, in that it permits land to be leased, inherited and mortgaged, thereby effectively restricting the role of many co-operatives in any further reform. An assessment of the impacts of the present land reform by Kolko (1997) argue that some co-operatives now 'exist in name only' (p.92) and that even the Communist Party in some areas have 'all but disappeared' (p.92). Although the institutionalisation of tradeable land use rights has proceeded rapidly in the Mekong Delta, the role of Co-operatives remains, however, more significant in the Red River Delta. The 1993 Land Law initially limits individual households to three hectares of agricultural land, with tenure for 20 years for annual crops and up to 50 years for forestry and longer term crops. The legitimate emergence of rental markets in land and other agricultural factors of production has been observed widely in the agricultural producing areas in Vietnam.

In general, the enhancement of the institutions of civil society within the Communes documented in this section enhance security and potentially reduce the recovery time after the impact of a major storm. Similarly the re-emergence of informal Street Associations and other local level institutions enhances collective security.

3.5 Perceptions of vulnerability

Behavioural explanations of institutional inertia on collective security from coastal storms focus on such factors as the length of time since the last major event, and the 'institutional amnesia' surrounding this. Research on periodic natural hazards, as discussed for example in Burton et al. (1993), highlights that the opposite to adaptation can take place: unfamiliarity leads to greater impacts in the same way that familiarity with hazards leads to rapid adaptation. Such behaviour also reflects differential perceptions of significance to impacts and risks of different types within any culture. These subjective risks inevitably deviate from the objective risks. The impacts of climatic

changes which increase the frequency of extreme events, leads to adaptation in behaviour, as the extreme events become the norm.

The major storms affecting Xuan Thuy in living memory occurred in 1962, 1968, 1973, 1983, 1986, 1989 and 1992. Most Communes ranked the 1986 storm as the most severe, though the storm in 1983 was also severe in southern Xuan Thuy, and the 1992 storm had serious economic consequences in Communes where aquaculture is a major income source. The relatively minor storm caused loss of shrimp stocks, and caused some households to sell their leases, leading to the consolidation of wealth and resources. But the 1992 storm was not considered serious by Commune officials because it did not impose costs on the collective responsibility. In the words of one Commune official:

‘this was a bad storm for individuals, but was not significant for our Commune and its protection’.

The long interval since the last major storm does affect perceptions of the hazard. Many householders exhibit ‘determinate perception’ where they assume that extreme events are not random (see Smith, 1996 p.69 for example). Rather, a commonly held perception in Xuan Thuy is that the long period since the last major storm in Xuan Thuy increases the chances of further storms with each passing year. Offsetting this wariness of imminent storms, householders also recognise the economic dimension to the magnitude of impacts and individual vulnerability. As one householder in Giao Thien commented on impacts on households in general:

‘The impact of storms is dependent on whether we are well off or not. In the past people were poor so thought the storms were worse, but now they don’t, even if the storm is the same’.

There are large differences in perceptions of householders of the same physical events. The differences in assessment of the severity of the same events are based on the direct social and economic impacts of the event on the household, or at least on close neighbourhood.

Members of some households remember past storms in great detail, particularly those of 1986, 1962 (the ‘worst in living memory’) and 1972, though the recollection by individuals of other storms is less precise. One householder in Giao Lam volunteered the date of the most significant storm for his family as 24th August 1962 (by the lunar calendar). His recollection was so accurate because his grandfather and father both died as result of the storm on that day. Both male and female ancestors to two or three generations are venerated on their deathdate, so particular households recall details of historical storms through this cultural ‘attachment’ shared through kinship and lineage.

The perceptions of householders of the extent and severity of a storm are directly correlated with their recollections of the material losses occurred by themselves or by their close neighbours and families. This is not surprising and leads to the observations by households in coastal Communes that a major storm occurred in 1992, where inland communities could only recall a major storm in 1986. The distance from the coast directly explains this apparent amnesia on the part of the inland households, yet the severity of the 1992 storm was also expressed to be greater by the Communes of Giao An and Giao Thien than by other coastal communes. From a physical standpoint, Giao An, Giao Thien, Giao Lac and Giao Xuan could be expected to be buffered from any storm surge by the presence of the Mangrove Reserve Area. But the 1992 storm most directly affected the

aquaculture sector. The devastating impact of the loss of the entire stock of shrimp ponds of the coastal aquaculture enterprises was related by the households engaged in aquaculture of whom 70 percent are concentrated in Giao An and Giao Thien.

A radical change in attitudes to storm impacts is highlighted by Commune officials who see impacts on private property as not being of concern to the Commune or to collective vulnerability. In the words of one householder from Giao Hai:

‘The 1983 storm was significant, but I was just a Commune member. I didn’t really grasp the total damage [to the Commune], and I didn’t own any assets. The 1986 storm seemed worse as it was our own property that was being lost. I was much more worried when the property was my own as I had to look after it myself’.

It therefore appears that the dominance of private property and potential breakdown in collective responsibility associated with private property has potential costs in terms of motivations for collective action and security.

4 Summarising the Trends in Institutional Adaptation

Institutions both constrain and facilitate adaptation to both social and environmental change. Institutional changes interact with material determinants of and indicators of vulnerability (Adger, 1998) such as access and entitlements to resources, the moral economy and technological adaptation. The importance of the institutional dimensions is that social coping and adaptation to rapid social and environmental change in Vietnam is inextricably intertwined with the impacts of global change.

In summary, institutional change, adaptation and inertia cover a multitude of activities and trends at many different scales. But to summarise the empirical observations from Xuan Thuy, institutional inertia and the reinforcement of strictly hierarchical structures exacerbate vulnerability in the short run at the District and Commune level, while many other adaptations within formal as well as non-formal institutions offset this trend and enhance security. The manifestations of institutional change can be observed as material outcomes of formal institutional action and inaction, but also by perceptions of coping and response and the nature of the hazardous environment.

The two phenomena highlighted at the beginning of this paper provide a framework for the analysis of the information subsequently presented: these are the role of formal institutions in retaining and enhancing power and legitimacy and the underlying perceptions and shared assumptions which drive institutional agendas. Of these, the decision processes set by formal institutions to retain their own influence appear to have the greatest explanatory power in determining the institutional aspects of collective vulnerability. In other words, the continued dominance of state institutions in numerous aspects of resource allocation and provision of social security in Vietnam, results in these institutions being the key determinants of collective security and vulnerability.

The observed institutional changes are almost exclusively stimulated by the processes of economic liberalisation and transition to the market economy. The speed of this liberalisation makes it relatively more easy to observe the impacts of rapid institutional change, and illustrates that

offsetting nature of most changes in terms of vulnerability. Thus the reinforcing of Commune influence over resource allocation in the present era in Vietnam of the 'rolling back' of the state in Vietnam, enhances collective vulnerability in the case of the sea dike maintenance at the District level.

Households in the coastal Communes are the most 'economically' vulnerable to the impacts of severe storms, and to storms of less intensity, and hence greater frequency than neighbouring coastal communes. Paradoxically then, these are the same coastal Communes in Xuan Thuy, where traditional sources of income, from agriculture for example, are 'protected' by the existence of a large scale mangrove area. The likely lesser impact of storms of a moderate severity on basic agricultural incomes, ensures that social vulnerability is lower than would otherwise be. These circumstances also point to the conflicts of interest between the more capitalised intensive aquaculture leaseholders, in terms of management of the privatised and protected area, with the requirements of the whole District and the coastal communes in particular for effective coastal protection enhanced by as large an undisturbed mangrove area as possible.

The liberalisation process and the opening up of the Vietnamese economy has reduced economic autarky and collective action in northern Vietnam. The same processes are also associated with changes in land tenure and labour arrangements and have led to efficiency gains in the economy, as defined through principles of productivity of economic factors of production.

In the field of hazard mitigation, the dike maintenance system has become increasingly monetised and professionalised. But even within this particular aspect of Commune responsibility, the redirection of resources towards the core of politically influential Communes in coastal Xuan Thuy is the principle negative outcome (in terms of vulnerability) of autarchic decision-making. At a higher level, District and Province level institutions side-step the issue of a potentially more risky coastal environment, and provide the minimum of strategic planning. The Vietnamese experience of 'decentralisation' of the economy provides evidence that the political re-casting of some of the organs of administrative power does not necessarily lead to greater local participation and collective empowerment (Slater, 1989). In this case power at the local level remains concentrated in the Party structure.

The desire for ever increasing agricultural production and economic growth, the standard operating procedures for decision-making inevitably leads to planning which may not be cognisant of social and environmental consequences of the decisions taken. For example, Xuan Thuy District plans to develop coastal areas in their drive for economic growth, reflecting the central place of both planning and economic growth in the drive for 'modernisation'. Documents from the Xuan Thuy District Party, for example, outlines the plans for 'improvement' of the coastal areas in the late 1990s:

'Xuan Thuy is endowed with 10,000 hectares of new deposited land which is very suitable for the development of seafood rearing business. In the next few years, the existing 2,000 hectares of swamps and lakes for shrimp rearing will be upgraded and 3,200 new hectares of swampy area will be dammed. This project is conducted together with another project to improve existing fishing fleet and build new trawlers. All these efforts are expected to boost annual output to 1,200 tonnes of shrimp, 1,000 tonnes of fish, and 800 tonnes of other seafood products'. (Xuan Thuy District Party Committee, no date)

The simple objective of economic growth, as part of the worldview of the Commune and District institutions, may be a hangover from collectivised agriculture, or alternatively may be part of a 'liberation' of latent capitalism within the economic system (see Fforde and de Vylder, 1996 for a discussion). Under either worldview, this objective of economic growth fundamentally deflects planning authorities from the sustainability and environmental implications of priority setting. In the present circumstances, the priority that coastal protection is given is diminishing. The downgrading of coastal protection results partly from the changing priorities under economic liberalisation partly as a result of constraints on Communes which have fewer resources to allocate; and partly in the case of Xuan Thuy as a result of the long interval since the last climate extreme. The present situation represents a 'baseline' level of vulnerability, rather than a recovery period.

5 Conclusions

The purpose of this paper is to examine whether presently observed institutional change in Vietnam is contributing effectively to collective security or enhancing social vulnerability to climate extremes in the context of global environmental change. Local autonomy from central state policy, and the central role of Provinces, Districts and Communes, have led in the past to dissipation of infrastructure investments in Vietnam. This has not necessarily led to greater local participation in decision-making (see discussion above of decentralisation and Slater, 1989), but the system of local autonomy would appear to have a potential cost in terms of information provision for climate hazards, as mentioned by many Commune level officials. Autonomy at the local level may inevitably be enhanced with the increasing commitments of time and resources to privately owned assets. Private economic activity is leading to higher opportunity costs of time and less co-operation in collective action.

Offsetting this trend, the re-emergence of older associations which may promote the moral economy and offset the reduction in the direct influence of the state. Previously government organisations have sanctioned these legitimate collective communal practice, by giving such institutions a party name, hence retaining some control. In their present mode, such informal collective security mechanisms enhance livelihood resilience, but their role in coping with *actual* impacts of extreme events has not been directly observed in the present study.

The Commune level governments retain the affection of their citizens, and thus legitimacy, because of the strong tradition of communal ownership and co-operative practices. In addition, local government institutions retain high legitimacy because of their effectiveness in organizing recovery from the impacts of major floods, particularly during wartime (Lacoste, 1973). Thus the Communes are the representation of the nationalist and 'communal' worldview which helped the country survive wartime destruction and subsequent hardships.

The underlying shared belief that Vietnam's continued struggle for economic development and regional autarky is based on the collective actions of rural areas has not altered in the period since market liberalisation, according to evidence gathered in the course of this study. The processes of changing incidence of extreme events as a result of climatic changes will, however, take place over a timescale where the worldviews of those experiencing the risks and inherent vulnerability could have altered irrevocably. In other words, the impacts of future climate change in Vietnam may be felt on a more atomised social structure which will only exacerbate collective social vulnerability.

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