

Living with the Floods

Coping and Adaptation Strategies of Households and Local Institutions in Central Vietnam

Malin Beckman, Le Van An and Le Quang Bao



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Abbreviations

DARD	Department of Agriculture and Rural Development (Province level)
HUAF	Hue University of Agriculture and Forestry
IPRSP	Interim Poverty Reduction Strategy Paper
LTC	Land Tenure Certificate
MARD	Ministry of Agriculture and Rural Development
NGO	Non-Government Organisation
PC	People's Committee
REPSI	Resources Policy Support Initiative
SAREC	Sida's Department for Research Cooperation
Sida	Swedish International Development Co-operation Agency
UNDP	United Nations Development Programme
USD	United States Dollar
VBARD	Vietnam Bank for Agriculture and Rural Development
VND	Vietnamese Dong (currency) 1 USD = 15,000 VND
WRI	World Resources Institute
WSMB	Bo River Watershed Management Board

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Executive Summary

Purpose of the study

In November 1999 there were disaster floods in Central Vietnam, affecting eight provinces, killing 700 people and causing material damage of over 250 million USD. This study concerns itself with the capacity of people to recover after these floods and with the development issues that arise from the experience of coping with the flood crisis. What factors influence vulnerability and capacity to recover? What lessons can be drawn regarding natural resource management and institutional change? What are the policy implications for disaster mitigation and development?

We look at the experience of four communes in two districts covering different geographical and production conditions, from mountain, to hill land, to lowland. The districts are A Luoi district, Thua Thien Hue province (mountainous) and Hai Lang district, Quang Tri province (hill land, lowland).

Impact of the floods

The floods had a large impact on the livelihood conditions of almost all the people in the eight provinces affected. The main loss for the lowland people, apart from the loss of lives, was their rice in storage, animals and damage to the houses. Food security was threatened and investments lost. In the hill land the main losses were the hill land crops which were being cultivated for food security and animal husbandry, and garden cash crops, such as pepper and fruit trees. Many people thereby lost long-term sources of income which will take many years to recover. In the mountains the main impact was the damage to the land, especially close to the river, which was either eroded or inundated with sand and stone. Growing crops of cassava, banana and sugarcane were lost. The loss of cassava had a serious impact for food security.

Support for relief and recovery

There was massive mobilisation by the State and organisations at all levels to distribute emergency relief, including food, blankets and clothes. The food supplies lasted two to three months.

The State provided credit for recovery of production. Allocation of credit in Hai Lang district was based on area of paddy production. This was mainly a practical decision, in order to be able to administer the quick distribution, and the credit reached a vast majority of the households. The credit was mainly used to secure inputs for rice production, but was also used for other production purposes. Those who lacked resources for recovery were groups such as the fishermen, who don't have any paddy. Most of the hill land population have a little paddy land.

For the mountain commune the credit was restricted to recovery of losses sustained in fish raising, the main source of income generation that was affected by the floods. Very few households in Hong Ha commune had access to the credit. The type of losses in the mountain areas (land, land fertility, cassava, banana) were not defined as 'economic' resources (in the sense that they had not been bought nor were to be sold) and this influenced the decisions on credit allocation, reportedly made as a result of province directives.

Apart from the food relief and production credit, the third large area of emergency support was the provision of subsidised seed. Local government and local organisations expended great efforts in purchasing seed, both for rehabilitation of normal production, and for planting emergency crops of vegetables and tubers.

Large labour efforts were required for clearing the environment, burying dead animals, repairing houses, digging away mud, sand and stone and repairing infrastructure. The district organised the support from the army and the police, and all the local organisations took part in organising the

joint effort. In the mountain commune the individual households received much less help when it came to recovering their individual plots of land from under the stone.

Household capacity to recover

After the relief food supplies were finished, most people were not yet producing a significant amount of food, apart from vegetables. The situation was solved in different ways in the three different areas. In the mountain areas the commune leadership approached all kinds of organisations at province level and asked for support. They thus secured food supplies until June 2000, when the first rice crop after the floods could be harvested. The hill land population survived from day to day by collecting minor forest products, such as firewood and broom straw, and selling day labour. The lowland people do not have forest and have fewer labour opportunities. (The main labour opportunities are in the planting and harvesting of rice, however these opportunities do not occur in periods of food shortages.) Many lowland households thus bridged the food gap by taking seasonal loans of rice, which were paid back after the harvest.

Almost all households have had difficulties in recovering resources because of difficult production conditions. On the lowland the rains continued to cause problems for the spring crop of 2000. Many people had to replant twice and the costs for drainage and inputs were high. The rice price has been low and people have had very little surplus from production. Rains before harvest continued to cause problems for the quality of rice in 2001.

In the mountain commune, people struggled hard to recover their land from sand and stone. Many people were digging full-time for two months. Their access to land is very limited and mainly restricted to the low-lying land close to the river. Much of the land was cultivated with sugarcane, which could not be sold, so a great deal of effort went into clearing that land for food crop production. Access to hill land for cultivation is limited either by rules protecting forestland or because the land is covered with imperata grass, which makes cultivation difficult. Resources for recovery are therefore scarce.

There were large sanitation problems after the floods, causing epidemics of animal husbandry diseases. Many people, who reinvested in pigs and poultry after the floods, were again faced with losses. There were however no human disease epidemics, due to massive disinfecting efforts with chlorine added to all drinking water.

The poor have experienced the greatest difficulties in recovering due to four main factors:

- The poor have houses of poorer quality, which therefore sustained greater damage than the houses belonging to the better-off. The poor used more resources to repair and strengthen their houses in proportion to their total resources.
- The poor had a higher degree of production failure in animal husbandry due to diseases caused by lower standards in sanitation and less production knowledge.
- The poor have a less diversified household economy and are more dependent on paddy production (for people in the lowland) and cassava (for people in the mountain area).
- The poor often have lower labour capacity and poorer health conditions. The recovery process is often very labour-demanding.

The experience of the floods was very traumatic, especially for people who had nowhere to go when the water rose right up to the roofs of their houses. The strong wind caused fierce waves which made mobility difficult. Many people reacted by investing heavily in their houses, in order to feel less vulnerable to future floods. This is likely to cause problems for some households, who have invested beyond their capacity to pay.



Hong Ha commune, A Luoi district

Institutional factors influencing recovery

In the mountain areas, land management issues are seen by both commune and district level to be the key, both to the immediate capacity to recover from the floods, and the long-term development strategies.

Today, the management of the hill land is controlled by the Bo River Watershed Management Board, the Forest Station and the State Forest Enterprise. The Watershed Management Board designates which area to plant and with which species, without consulting either district or commune authorities. The households do not take initiatives to develop the sloping land for fear that it will be claimed for forest planting in mid-crop season.

The main Province strategy for improving access to land is a resettlement programme to open up new areas for cultivation along the Bo River Valley. Thirty-five households have already moved there. The development strategy is mainly based on the cultivation of fruit trees and pepper. The new area is less at risk from flooding but the development strategy involves other risks especially initially, because of lack of experience, lack of market channels and market information and insufficient development of input supply networks.

In the case of Hong Ha commune, there seems to be unused potential in the development of natural resources available. The management structures are not meant for the use and development of the hill land resources, they are meant for protection. The commune and district authorities are arguing for a revision of land use planning and land management with the following purpose:

- To make a detailed assessment of the protection needs in the watershed and assess what kind of ground cover is required, and in which areas. The existing plan is too general and defines practically the whole area as protected land.
- To analyse which land, presently defined as forest land, could be developed for agriculture or agro-forestry purposes.
- To increase district and commune capacity for the development of agro-forestry, which would fulfil the multiple purposes of environment protection, sources of income and sources of food.
- To include bamboo planting along the river as part of the tree planting programmes.

Institutionally this would involve:

- Increased resources for the district and commune to conduct land use analysis and land use planning.
- Clarification of commune and household rights regarding the hill land close to the settlement area.
- Allocation of hill land to the commune and households for agro-forestry development.
- Redefinition of the mandate of the Province Watershed Management Board to involve the district and commune authorities in the planning and management process.
- The use of the personnel resources of the Forest Inspection System to support the commune and the households in forest development and management.
- State support for commune management of bamboo planting for reduced riverbank erosion and flooding.

In the lowland and hill land areas of Hai Lang district, the main institutional issues regarding recovery concern credit and insurance systems. The credit requirements include:

- Community management of savings and credit funds which can partly replace the need to take out private loans to bridge seasonal gaps.
- Long-term credit for flood recovery, which is paid back in instalments.
- Improved capacity for the co-operative management of input supply credit.
- Credit and insurance systems which enable people to take more risks in the process of developing new lines of income generation for diversification.
- Insurance policies protecting against harvest losses and damage to property.
- Special credit and extension support programmes to help poor households who are deeply in debt to gradually stabilise their economic situation.
- Health insurance policies.

In the communes we studied, the credit for flood recovery has not been sufficient for recovery. The credit was largely used to replace lost resources, mainly rice, and did not contribute to the accumulation of new resources. It is therefore difficult for many people to repay. In order to be effective for recovery, the repayment term needs to be longer, with repayments made in instalments relative to the harvest seasons.

The credit was mainly directed at the recovery of production and in this it was effective. The recovery support was explicitly not a poverty alleviation programme, it targeted the areas and people who had suffered the largest losses in the floods. Our study indicates that the poor have greater difficulty in recovering to a stable situation than the 'non-poor', which would argue for increased attention to the needs of the poor after the floods, in order to avoid them finding themselves in even deeper difficulties.

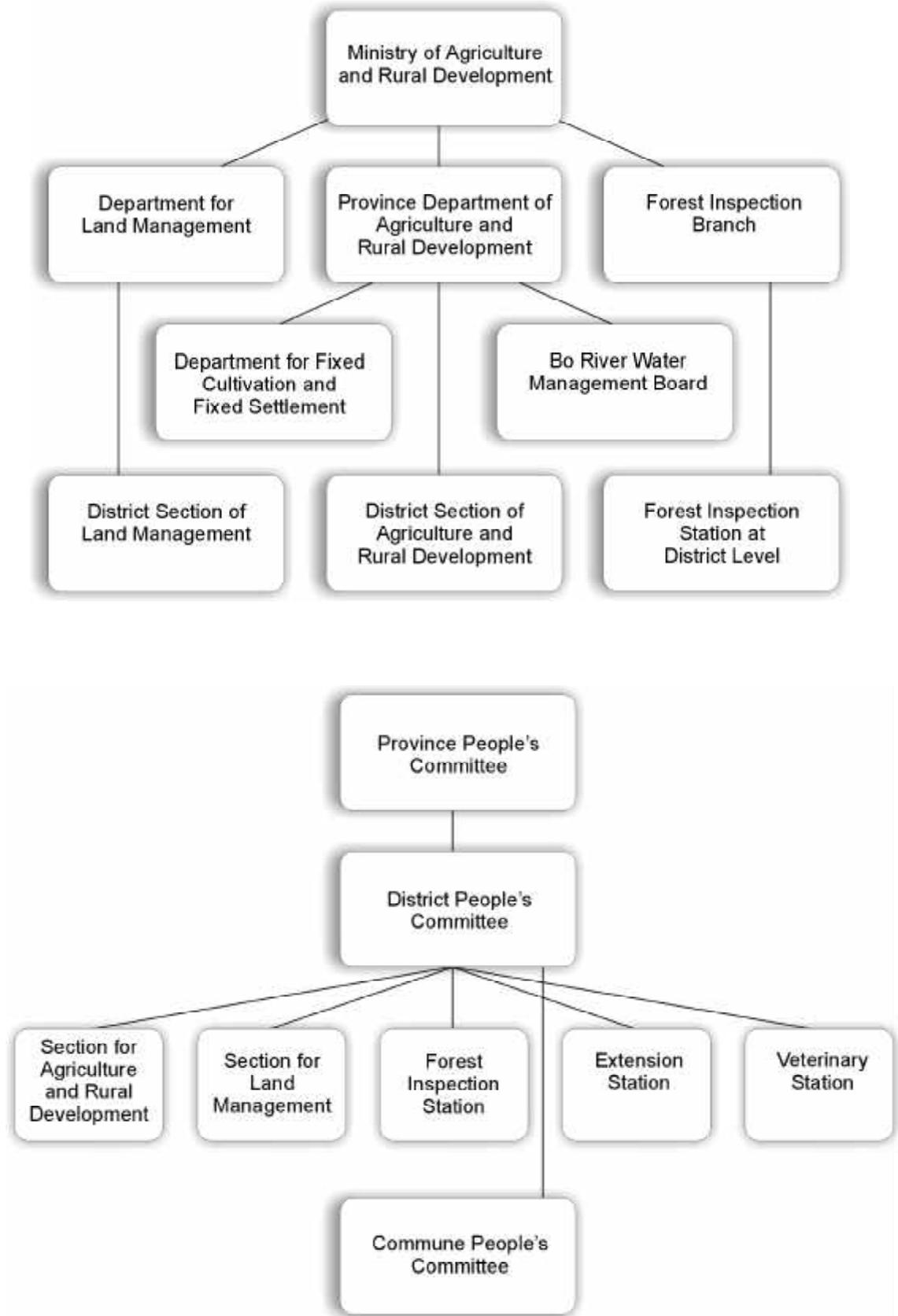


Figure 1. Administrative Structure

1 Introduction

1.1 Background

During recent years several large floods have caused disasters in Southeast Asia. Historically there have always been floods, but the frequency of serious ones during the last few years has increased policy attention regarding disaster mitigation. What can be done to improve management of resources to reduce the impact of the floods, reduce vulnerability and improve conditions for recovery?

In November 1999 disaster floods struck eight provinces in central Vietnam. 2700 mm of rain fell in four days and caused serious damage to livelihood and production systems in both upland and lowland areas. Seven hundred people died in the region. There was land erosion, land inundation with sand and stones, destruction of growing crops due to waterlogged root systems, loss of animals, loss of crops in storage, damage to houses, damage to water management infrastructure, roads and bridges etc. The floods in the mountain and hilly areas were mainly characterised by flash floods, with the destruction caused by the power of the massive water flow. In more low-lying areas the main damage was caused by the long inundation with high water levels, reaching up to two metres in the houses for several days.

The people in the flood-stricken provinces already live under difficult conditions due to the frequent minor floods and their impact on production and livelihood. The mountain population also struggles with the process of adapting from their traditional shifting cultivation system to fixed cultivation. Their response to the natural disaster is combined with the ongoing process of adaptation to other uncertainties involved in the change and development of the institutions for natural resource management.

1.2 Purpose of the study

This study focuses on issues of livelihood strategies and institutional challenges, which arise in the context of recovery after the disaster floods in 1999. We discuss household coping strategies and capacity to recover in the context of policy formulation for disaster mitigation and development in disaster-prone areas. We look at implications for policy priorities and strategies to reduce vulnerability.

We look at different aspects of the livelihood situation, production systems and institutional context that influence the capacity of the households to recover from shocks and crises. We focus on the conditions that make poor people particularly vulnerable, and the capacity of local institutions to address these conditions.

Vulnerability and resilience vary between the upland and lowland communities, with their different geographical, socio-economic and institutional conditions.

We are interested in the institutional challenges, which arise in the process of recovery, and the differences in strategies and policy priorities in the different areas.

1.3 Methodology

We look at two districts as case studies. One is A Luoi district of Thua Thien Hue province, which is a mountainous district with a mainly ethnic minority population. The other is Hai Lang district of Quang Tri province, which stretches from the coast, to lowland rice-cultivation areas and hill land with mixed farming systems. In A Luoi district we worked in Hong Ha commune, which is on the road to A Luoi town in the Bo River watershed, 50 km from Hue city. In Hai Lang district, we worked in one hill land commune, Hai Chanh, and two lowland communes, Hai Tan and Hai Thanh.

The study is mainly a field study and is based on household interviews with a total of 50 households in four different communes and a number of group discussions and meetings at village, commune and district level. The research team consisted of staff from Hue University of Agriculture and Forestry, the two districts' Section for Agriculture and Rural Development and the Swedish University of Agriculture Sciences. The fieldwork was conducted in May 2000, September-October 2000, February-March 2001 and December 2001.

The households were interviewed two to three times during 2000 and 2001 to hear their story of how the floods have affected them and their process of coping and recovery. The households were selected by the village leaders to represent different categories of households with different conditions and capacity to recover. Discussions were held with groups of ten households for joint evaluation of reasons for differences in capacity for recovery, differences in production strategies from a vulnerability perspective, as well as household evaluation of the role of relevant organisations for coping and recovery. Meetings and interviews were held with village, commune and district level organisations to get their picture of the recovery situation and factors important for capacity to recover. The district authorities were consulted during the whole process and finally district workshops were held to obtain feedback on the commune results of our survey, and to discuss district strategies for disaster mitigation and reducing vulnerability.

We made efforts to anchor and agree on the results of our study together with the people involved at all levels (village, commune, district), but there may still be misunderstandings from our side. If so we apologize! There may also be information gaps occurring due to our focus on the district level and below. Province and national level have not been consulted during the fieldwork.

1.4 Framework and context

The Resources Policy Support Initiative (REPSI) is a project to improve the basis for decision-making about development and natural resource use in the uplands of mainland Southeast Asia. The studies seek strategies for the strengthening of local natural resource management institutions, for creating mechanisms at regional level for the participation of stakeholders in decision-making and promoting policy dialogue. The three research themes, expressed from the perspective of the users, involve the questions of 'how to protect and manage the flow of the critical economic resource – water?', 'how to maintain adequate control over local resources to protect livelihoods?', and 'how to manage the relationships with neighbours who depend on or compete for the same resources?'.

One of the REPSI themes concerns local institutions, livelihoods and resource management. A major set of studies discusses experiences with decentralisation of natural resource management and its potential for empowering the poor and improving local ecological management. Key issues in this context concern the growing competition over water, forest and land resources, and the adequacy of land tenure systems and local institutional capacities for land use management. Challenges to build capacity in government agencies and community institutions are summarised in Blake Ratner's (2000) paper on watershed governance. One example is Thailand's experience of a community forest bill, providing legislation to tie rights of resource access to responsibilities for resource protection building on traditional tenure and rights systems. Ratner stresses the need for better understanding of the impact of alternative forms of upland resource management on ecosystem services, for the increased benefit and reduced conflict among the users of these services. He finds that addressing underlying causes of resource competition requires changing the fundamental ground rules that define who is involved in making resource management decisions, what powers these actors exercise, and how they are held accountable for their decisions.

For our discussion of the relation between household capacity to recover and the institutional context which determines their access to resources, we find the Sustainable Livelihoods Approach

to be a valuable framework, as developed by John Farrington et. al. at ODI in London¹. The Sustainable Livelihoods Approach looks at the household livelihood within the institutional structures and processes which influence and shape the livelihood strategies. The understanding of vulnerability and resilience has a central part to play. Farrington et. al. (1999) discuss the concept of sustainability. They argue that ‘For activities to be maintained, the institutions underpinning them – whether traditional, government or commercial – need to be sustained ... portfolios of activities shift in response to people’s *capacity* to generate new activities in response to needs and opportunities. This capacity depends on vulnerability, assets, structures and processes (see figure below). Individually these will wax and wane, but the platform that they provide *in combination* must be stable or rising if people’s capacity to generate new activities is to be stable.’ The context as well as people’s access to resources is continuously changing. Sustainable livelihood thus concerns the dynamic issue of capacity rather than a static measurement of level of income or other commonly used measurements of poverty.

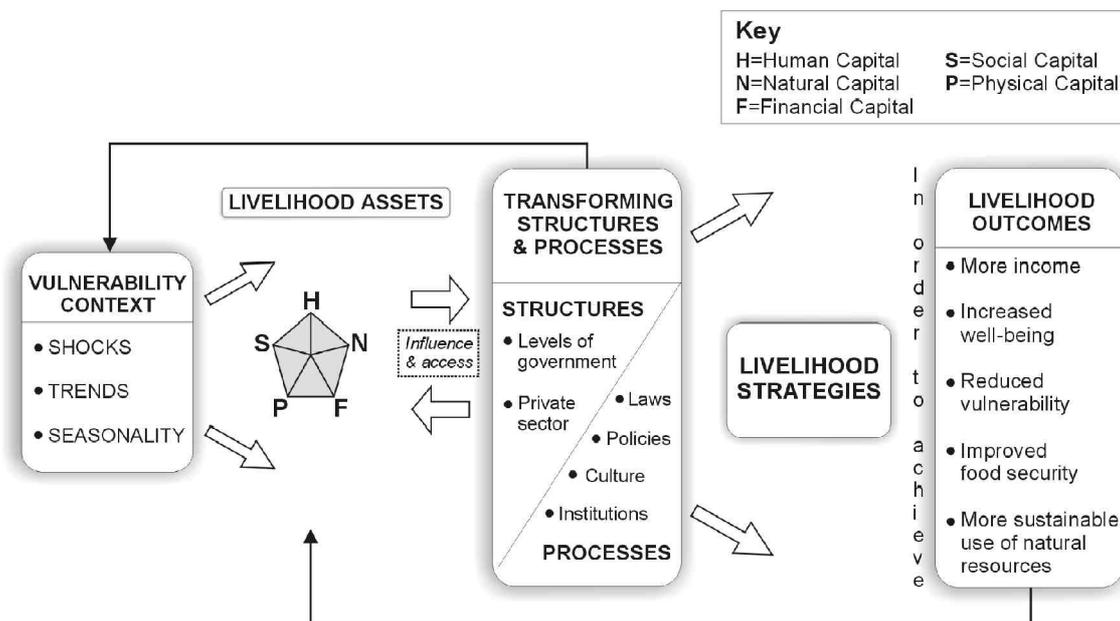


Figure 2. Sustainable Livelihood framework

Source: Ashley and Carney, 1999

Frank Ellis (2000) stresses the concept of ‘access’ as the context of social relations, institutions and organisations, which mediate household capacity to develop their livelihoods. He also emphasises the issue of diversification as vital for reducing vulnerability, and for enhancing the sustainability of hazard-prone livelihood systems by spreading risk and increasing the options for substitution between diverse livelihood components.

1.4.1 Vulnerability

Lewis (1999) quotes Winchester (1992) in defining vulnerability as compounded by the degree to which a community is at risk and the socio-economic and socio-political factors which affect the community’s capacity to recover; by availability of and accessibility to resources, and on the personal level, by ‘defencelessness and the inability to cope with risk, shocks and stress’.

A more narrow definition, which does not include capacity to recover, follows the formula $Hazard \times Vulnerability = Risk$. Hazard is the potentially damaging phenomenon. Vulnerability is

¹ The sustainable livelihoods approach was first developed by Chambers and Conway (1992) and developed by Ian Scoones (1998) and others.

the degree of susceptibility to a hazard and the risk is the product of the hazard and vulnerability (van Essche, 1986, quoted by Lewis). The concept of vulnerability here focuses on the reason for the location and condition of the elements at risk, being for example infrastructure, cultivation, community or person.

Lewis ties together the concepts of vulnerability, recovery and development by arguing that 'vulnerability is the product of sets of prevailing conditions within which disasters may occur. Vulnerability has to be addressed therefore, not only by post-disaster concern and response, but as a part of the day-to-day management of change – whether or not that change is called development.' He stresses that the condition of a person, structure or community before a disaster has significant bearing on the capacity to recover.

Lewis also wants to draw attention to the many 'small disasters' which occur regularly and undermine the livelihood conditions of many people. Such 'small disasters' are of special importance when understanding what causes people to be vulnerable. He is interested in the relative damage caused by a disaster to a community, even though the disaster may be relatively small in absolute comparison.

The theme of the World Disasters Report 2001 (Red Cross/Red Crescent) is Recovery. The report points at gaps between life-saving relief and long-term development, which can leave disaster-affected people stranded. Too often are people just 'reconstructing risk' when they rebuild their homes and recover production, leaving them just as exposed to future hazards. The report collects experiences seeking forms of recovery which improve the resilience of individuals and communities to future disasters.

1.4.2 Our approach

Our study is part of the REPSI theme on local institutions, livelihoods and resource management. The study focuses on issues of livelihood strategies and natural resource management, which arise in the context of recovery after the disaster floods in 1999. The floods bring a number of issues into focus regarding institutional arrangement for natural resource management. The disaster floods made it clear that the present production system makes people very vulnerable to crises in general and floods in particular. We look at the different factors influencing vulnerability and capacity to recover. These involve access to resources and the institutional rules and conditions that govern household access to resources. The interaction between actors in natural resource management is renegotiated as a consequence of the floods. The role of local government and local organisations becomes stronger, and thus coincides with an overall trend towards decentralisation of power in community management issues.

The word vulnerability is difficult to translate into Vietnamese. One alternative is 'de bi ton thuong' which means 'easily hurt', which is close to the definition above, as 'susceptibility to damage'. We are however interested in the broader interpretation of vulnerability, which would include capacity to recover, and the *relative* impact on the household and community, rather than susceptibility to damage in absolute terms. Someone can lose a lot in a disaster, but still recover fairly quickly, and many people have difficulties recovering even though the absolute damage was relatively small. The physical, social and institutional conditions that determine vulnerability are also the conditions which determine capacity to recover. We actually only know if people were vulnerable or not when we have seen whether they have the capacity to recover or not.

How then do we know if recovery has taken place? The 'Australian Emergency Management Glossary' defines recovery as the 'measures which support emergency-affected individuals and communities in the reconstruction of the physical infrastructure and restoration of emotional, economic and physical well-being.' We have not attempted to measure such restoration, but stopped at the subjective perception of individual households and communities concerning the degree of recovery.

1.5 Policy context

Disaster mitigation is high on the policy agenda in Vietnam. The floods in Central Vietnam were followed by disaster floods in the Mekong delta in 2000. Disaster preparedness and mitigation is now being incorporated in all rural development strategies, e.g. the Extension Department has a special analysis of which production systems to promote in order to reduce vulnerability to the floods. The Government, through the Ministry of Agriculture and Rural Development, together with UNDP and the Royal Netherlands Embassy, headed a Government–Donor co-operation for an ‘Integrated Natural Disaster Mitigation Policy’. A wide range of international consultants were involved, mainly on the assessment of the technical aspects of disaster mitigation. The result was a comprehensive set of proposals for infrastructure investments, flood forecasting and warning systems, disaster preparedness training, institutional capacity for emergency response etc. The strategy mainly concerns the mitigation of the immediate impact of the disaster. The support for recovery after the floods is mainly addressed in the Government strategies for poverty alleviation.

The Vietnamese Government is in the process of formulating a ‘Comprehensive Poverty Reduction and Growth Strategy’ for the coming ten-year period. The Interim Poverty Reduction Strategy Paper (IPRSP 2001) includes measures both for disaster mitigation, reducing vulnerability and strengthening the capacity of the poor to recover after crisis.

The IPRSP includes the following measures related to disaster mitigation:

- The strengthening of infrastructure to reduce the damage caused by floods.
- The establishment of Emergency Relief Funds in each province.
- The establishment of Social Relief Centres.
- Training on the management of disaster relief.
- Provision of a share of material support to households to strengthen their physical conditions (e.g. houses) for mitigating disasters.
- Provision of necessary means to rehabilitate production after disasters.
- Support for local medicine storage.
- Support for storage of food in each commune.
- Measures to reduce environmental damage.
- Enhancement of the role of local organisations in building and implementing local safety nets.

The IPRSP includes measures for poverty reduction, which also function to strengthen capacity to overcome crises:

- The strengthening of basic social services. Preferential regimes to reduce fees and costs in accessing social services. Ensuring adequate primary health care.
- The reclaiming of barren land and expansion of arable land.
- Improvement of veterinary and extension services.
- Improvement of agro-processing and preservation methods.
- Support for the development of employment opportunities and vocational training, both as business development by the poor and as labour opportunities for the poor.
- Support for economic co-operation between poor households.

- Improvement of credit procedures and loan conditions so that they are more appropriate to the poor.

The Government policy proposals have a broad approach to disaster mitigation and poverty reduction which is well in line with the experiences and demands from district, commune and household level. The IPRSP has drawn experience from the support after the 1999 floods which is expressed, for example, in having a more balanced approach regarding rehabilitation of production compared to other livelihood requirements.

The policies regarding disaster mitigation and support for recovery are more developed for the lowland areas than for the mountain areas. The impact of the floods in absolute terms was greater on the lowland than in the mountains. The consequences of the flood disaster for food security however seem to have been as serious for the people in the mountains as for the people on the lowland. Nevertheless, policies for disaster mitigation regarding the mountain areas confine themselves to a significant part to forest planting for watershed protection.

Watershed management in Vietnam has largely been seen from the forest protection perspective. The Bo River watershed in Thua Thien Hue is under the management of the Bo River Watershed Management Board, under the Department of Agriculture and Rural Development. Their role is to plant and protect forest in order to protect the watershed. A large part of the land of A Luoi district is allocated to the Watershed Management Board. The natural forest is protected by the Forest Inspection system. The role of the community has mainly been to stay out of the forest, except when contracted as labour for planting. The mountain population has seen their access to land being substantially reduced by forest planting.

A large part of the development agenda of the mountain communes falls under the 'Department for Fixed Cultivation and Fixed Settlement'. Their agenda is largely set at Province level. At district level there is no separate section, only staff of the Agriculture Section responsible for 'fixed cultivation issues'. The practical implementation is however often down to the commune, which leaves room for local adaptation according to commune priorities.

There is an ongoing process of developing institutions for natural resource management and decentralising responsibilities to local levels. There are ongoing pilot projects for allocating natural forestland for community management. The role of local government is being strengthened according to Government decree no 29 (1998) on Grassroots Democracy. Investments financed within the framework of the State programme for the 'communes in most difficulties' (decree 135, 1998) are based on commune priorities and participation in planning and implementation.

The larger issues of land use planning and natural resource management are still outside the scope of community management in the areas which are defined as watershed protection areas. The 1999 flood crisis has led to increased activity and awareness among local organisations and local government regarding the need for community involvement in the control over land resources, also in watershed areas.

2 A Luoi District, Thua Thien Hue Province

2.1 Impact of the floods

Floods are not a new phenomenon. There are floods almost every year, of varying size. These 'every year floods' can involve risks of damage if they come early, before the harvest of the annual crops. There is also damage to production if the floods are large enough to inundate the crops for more than a day. In 1953, 1983 and 1999 there were disaster floods. The force of the floods is such that it pulls away forest cover and leaves big scars in the landscape. Deforestation has increased the amount of landslides caused by the floods and the force of the river erodes land from the riverbanks. The impact of the floods on production has altered with the changing production systems. With the present concentration of cultivation on the flat land close to the river, the production system is much more at risk from the force of the river.

Mr Dam (Hong Ha commune, A Luoi)

I am 69 years old. I have been living here all my life.

The flood in 1953 was even bigger than last year's flood. But 1999 there was more landslides. 1953 there was full forest cover, but the flood still destroyed a lot. 1983 there was also a big flood, like 1999. We lost all the cassava and tubers. We were very hungry. We dug out roots in the forest to eat. Every year the flood takes land along the river. We used to plant bamboo along the river, but the floods took the bamboo as well.

The hill slopes around Hong Ha commune are mostly covered with forest, mainly young secondary forest and planted forest close to the settlement and natural forest further away. There are large areas of imperata grassland where the strong-rooted grass has made cultivation very difficult. A few patches of grass and bush, where there were previously swidden fields, can be seen from the settlement area. Swidden cultivation is almost out of practice, but still exists hidden away, in cases of emergency. The floods took 17 ha of planted forest, which were uprooted and swept away.

The impact of the 1999 floods on production in Hong Ha commune was large. The main cultivation area is the flat land between the river and the hill slopes. On this flat land people are growing paddy rice, dry-land rice, cassava, sugarcane, beans, maize and banana.

The force of the water swept away land along the river. The water transported sand and stone, which settled on the productive land. The paddy land was worst affected, as it is the most low-lying land. In some places over two metres of sand and stone settled on the land. People spent many months digging to recover their fields. Two out of 16 ha of paddy could not be recovered from the stone. Loss of paddy-land has the most serious long-term impact. The loss of growing cassava had the most serious short-term impact.

There were very few local sources of food until the rice harvest in June. Most of the 20 ha of cassava were lost because the land was inundated and the roots rotted and became inedible. Cassava is normally the main source of food during the seven months between the harvest of the autumn paddy and the spring paddy. After replanting, cassava was not available again until September 2000. Most of the cassava is grown on flat land close to the river, instead of on the hill slopes as previously. The food security situation was thus more threatened by the 1999 flood than previous floods, as the hill land does not get inundated and damaged as badly as the flat land. Banana is another important food crop which was damaged by the floods. In addition, the continuous rain has caused more banana pests (yellow leaf fungi) than normal.

During 1998-1999, 80% of the households in Hong Ha commune had invested in 35 ha of sugarcane production along the river. The State and a Singapore-based sugar company had recently invested in a sugar factory in Thua Thien Hue and there had been massive State campaigns and

credit to encourage sugarcane production. More than half of the sugarcane was damaged by the floods. The rest could not be sold either, as the company cancelled the buying of the harvest because transport costs would have been too high.

Farmers who were trying new investments in economic crops such as pepper and fruit trees in their gardens lost most of it due to inundation. Impact on fish raising was significant. Thirty thousand fish in ponds were swept away and the ponds were filled with sand and stone and had to be dug again. More pigs perished from the diseases following the floods than in the floods themselves. Some cattle grazing in the forest were swept away. Four people were swept away by the river and died.

Three houses were swept away completely by the floods. Many other houses were damaged and timber for building houses was lost. The road between Hue city and A Luoi district centre (73 km) was destroyed in 64 places. The Hong Ha bridge over the Bo River collapsed and communication with the district and province was broken for more than a month. Communications between the villages in the commune were also broken for a week because it was impossible to cross the river. All five classrooms and the clean water system were damaged.

Mr Duong, head of Pa RinH village: (October 2000, February 2001)

Pa RinH village has 43 households and 234 people. The village used to have 2.3 ha of paddy. Now it has 1.7 ha. 0.6 ha of former paddy-land is now dry due to the inundation of sand and stone and due to the damaged irrigation system.

Previously there were big floods in 1975 and 1983 when all the paddy land was inundated. Those floodwaters rose up to half a metre in my house. In 1999 the floodwater reached up the roof. We live close to the river in order to have access to water. If we moved higher up on the hill slopes access to water would be difficult.

All the land was deeply inundated with sand and stone. We are still working on digging out the land. It has taken many man months to recover the land. 0.6 ha of the paddy land has not been possible to recover. It is now dry and sandy. We have to leave it uncultivated during the spring crop. For the autumn crop we can plant dry-land rice.

We lost a lot of fish also. The cassava and maize was all wet and destroyed. We planted again after the floods, but the soil was so wet, so it was not good for the crops. We still continue to plant close to the river, as we have very limited access to cultivation on the hills. We should have safe places to move animals and people up higher on the hills when there are floods.



Mr Duong and his family, Pa RinH village, Hong Ha commune

2.2 Household coping strategies and recovery

According to commune estimates, around 60 % of the households have been able to recover fairly well after the floods. Forty percent are still in a difficult situation. It is the poor who find it hardest to recover. They are those most dependent on the paddy rice and the cassava, which was most badly affected. The better-off households have a larger diversity of income sources from cash crops and animal husbandry, along with non-land based business such as trading. The better-off have greater chances of obtaining credit for recovery of their production activities. Access to labour and good health are important factors for recovery. Recovery of the fields from the sand and stone is hard work. There is still some land further away from the settlement, which can be opened up for production, but which also requires hard work to secure irrigation, and someone has to live there to protect the fields from wild pigs.

A major part of the household coping strategies are related to securing access to land. Land available for production has decreased due to the floods and to restrictions on the use of the hill land. People use a patchwork of opportunities to supplement their paddy production. They borrow from each other and use marginal areas, which are risk-prone and not really meant for production. Mrs Xuong in Con Tom has even planted paddy in her fishpond, and dry land rice on an old helicopter terrace on the hillside. The sugarcane land has proven to be both a land buffer and a constraint for recovery. People are working hard to reconvert the land back to rice and other crops.

When discussing the level of damage by the floods and the level of recovery, people tend to focus on access to paddy. The households who do not have any paddy anymore, or very little paddy, are in the most difficult situation. In Pa Rinh village, there are eight households who no longer have paddy land.

The members of Mrs Kan Mua's household, who were also poor before the floods, and who lost their paddy land in the floods, are now dependent mainly on dry land crops and minor forest products. When we came back to visit Kan Mua's family in February 2001, only the children were at home. Both parents had already been away for a month collecting rattan in forests far away.

Box 1. Factors influencing capacity to recover

Pa Rinh and Con Tom village group discussions:

Good capacity to recover:

- The paddy land is slightly higher up and with better drainage conditions.
- Good labour capacity in the family. Good and even health.
- Diversified income. Several different areas of land and sources of income.
- Able to get credit.
- Relatively small proportion of household income from land-based production.
- Not so dependent on the water management system.
- Many formal and informal relations who can support them.
- Have reserves of food, money, land and other resources.
- Can access additional sources of land in times of crises.
- Can hire labour to help.
- Better capacity to prioritise which areas to concentrate resources on to recover.

Important factors regarding difficulties in recovery:

- Bad health. Not enough strength.
- Age structure of the family: many old people and children in relation to labour capacity.
- Relatively dependent on land-based production and income.
- Land in low-lying areas, which is vulnerable to flood damage.
- Production dependent on water management infrastructure which is easily damaged.
- Failed credit investments in animal husbandry (losses partly in the floods, and due to cold and diseases).
- Few formal and informal relations to access inputs and support.
- Diseases in the family costs a lot. Sometimes the family has to take out loans or use bank credit for medical purposes.
- Cultivate plots of hill land with low productivity.
- Uncertain access to hill land resources.

Mrs Kan Mua, Pa Rinh village: (October 2000)

We used to have 1500 m² paddy in the Khe Ca Te area. That land is now only good for dry land crops. We have planted beans and dry land rice. We got 24 kg of beans, which we sold for 100 kg of rice. We have been able to open up 250 m² of new field to plant paddy, so at least we have a little paddy rice. We had 1000 m² of sugarcane by the river, which was lost. We have managed to clear the sugarcane and plant dry land rice instead. Our mango, persimmon, cinnamon and pepper in the garden were lost. We have not planted again. We don't have any seedlings. We have 500 m² of swidden field, which gave us 180 kg of rice. The swidden field is the most important source of food security for us now that we don't have paddy. We would like to expand the swidden fields, but that is not possible. We had 300 plants of cassava, but the wild pigs destroyed that. If we had had the cassava we would have had enough to eat. We lack rice 5 months per year. We don't have any rice left now. After the floods we received rice, noodles, MSG, milk, mosquito net etc. from the district and the Red Cross. Many organisations sent food for relief during the spring. In the autumn we were hungry again. We collect leaves and firewood in the forest. We can get 30,000 dong per day, if both of us go, but it is very hard work. We go only around three days per month in order to have money for school fees, salt, MSG, village contributions etc. All six children go to school. My husband gets 245,000 dong per month in war pension because he was wounded.

Swidden cultivation

The Forest Station has stepped up the protection of the forest and people are generally scared of the consequences if the fire from the swidden field should spread. Some households such as Mrs Kan Mua's family have little choice other than to cultivate the swidden fields. They do not open up new fields however. They return to old ones, which are left fallow, and which have very low productivity.

Access to the hill lands is very restricted. There are formal possibilities for requesting permission from the district Forest Station for cultivation of the hill land. Very few households do so, as procedures for requesting permission are perceived as unclear and inhibiting. Land use rights have not been specified. Many households do not invest in the land because it can be claimed by the State for forest plantation with short notice. People are also reluctant to cultivate land far from the residential area, because of problems protecting it from wild pigs. There are large areas of hill land covered by imperata grass, to which the households have access. These areas are however very difficult to cultivate because of the strong tough root system of the imperata grass, which is hard to get rid of.

Forest tree planting is a temporary source of income

Forest planting is controlled by the Bo River Watershed Management Board under the province Department of Agriculture and Rural Development. The Board designated forest planting of 172 ha for 2000. 58 ha is allocated through the commune. The rest is contracted to private individuals and organisations (including a staff member of the Board and an Army unit) who in turn contract households, also from other communes, to plant and tend the forest on a day-labour basis.

The people of Hong Ha commune have little to do with the long term development of the forest, because of the contract arrangements and lack of household entitlement to the forest land. Planting contracts are offered to the villages. All households in that village, who register for planting can get a planting contract, divided equally and according to labour capacity. The households who don't plant are mainly the ones who lack labour. As an advance for planting 300,000 d/ha is offered, but people prefer one transfer of 1,068,000 VND/ ha (65 USD) later, in order to have funds for investment in something more substantial. In Pa Rinh village, nine households registered and shared the planting of 14 ha of forest. In previous years there were 22-25 households who registered for planting. At the time the planting was closer to the village. In

2000 the planting is more than two hours' walk away, which limits the capacity of many households to take part.

People in other villages, which were not offered planting contracts sometimes take day-labour contracts instead. Labour is paid for at a rate of 20-25,000 dong per day. Mrs Kan Bang works as a forest labourer under such an arrangement. It is not a stable arrangement. Labour is requested on a day-to-day basis and is dependent on relations with the different forest managers. She would prefer to have a planting contract directly with the Board.

Mrs Kan Bang, Con Tom village: (October 2000)

We are 6 in the family. 4 children of which 2 are still in nursery school.

We had 1000 m² of paddy, which we lost in the floods. It is not possible to recover. 2,500 m² of sugarcane were inundated and damaged. We haven't had the strength to clear those fields yet in order to plant other crops. We used the money from the sugarcane harvest in 1999 to buy wood to build our house, but we lost the wood in the floods.

We don't have any rice left, but we have cassava. We've just finished the rice that we got as flood relief. I go to the forest to collect leaves, which gives 5-10,000 VND per day. I've also collected 10 bo of firewood which I haven't sold yet. I work as a day labourer in the forest sometimes, which gives 20-25,000 VND per day. I try to get as much work in the forest as possible, sometimes it is difficult, sometimes it is easy. This year I got 50 labour days. It depends on one's contacts. One has to have good contacts with the army or other people who have forest contracts. I also get an income from tending the planting from last year, when we planted 1 ha. We got 479,000 VND for tending 1 ha over 3 years.

There is land available to develop dry land crops, but it is very hard work. I don't have the strength. My husband is away in the 'new area', where we have received 2500 m² of land for planting pineapple and fruit trees. He comes home once every 10 days, because it is 9 km away. The commune gave us the opportunity for getting land in the new area, maybe because they felt sorry for us and saw that we needed help. The commune also gave us 100,000 dong, so that we would have something to eat. We have been saving for a long time, so we have just invested 1.4 million VND in a tin roof for the house.



Mrs Kan Bang, Con Tom village,
Hong Ha commune

Selling labour as a coping strategy

It is mainly young people who have not yet settled with a family of their own, who do day labour in the commune such as road construction, digging fishponds and clearing fields.

Better-off households who have many different income generation activities hire labour in the village, for example during the harvest of rice and to recover their paddy fields. Payment is made in rice or money. The labour cost for recovering 500 m² of paddy field was around 1 million VND. Most households could not afford such a sum, so either they did the labour themselves, or left the field un-recovered.

2.2.1 Household priorities and perceptions of risk, feasibility and suitability for the poor

The risks and suitability of different lines of production were discussed with groups of households in Con Tom and Pa Rinh villages in Hong Ha commune. The results of the discussion are summarised in Table 1 and commented upon below.

Shortage of land is seen as the main problem in the production system, as people are used to a system which is traditionally extensive, with low investments and low yields. Shifting cultivation requires large land areas to function. Whilst presently moving away from shifting cultivation, the mode of production has not yet fully adapted to intensive cultivation on small areas of land. Traditionally people have responded to high production risks by not investing so much in any one area of production. The floods have re-enforced the reluctance to invest heavily in intensive paddy cultivation and there is a feeling of unused potential regarding the hill land and forestland.

In village discussions about risk, people identify as the first priority the need to secure access to food by increasing cassava cultivation. Cassava cultivation is considered to be low risk if grown on the hill slopes, but high risk if grown on the flat land. Paddy rice production received a good score for low risk, but a relatively low score (6) for suitability for the poor. This low score was due to the high input requirements. Many poor people lost the autumn harvest in 2000 because of pests and fungi. Opening up new paddy fields receives a low score, because of the large labour requirements and flood risk.

High priority are short-term paddy and dry land rice varieties, which can be harvested before the flood period starts. The traditional dry land rice has a long growing period, which is risky. Because of the concentration on paddy rice and the use of dry land for sugarcane production, there is a shortage of seed for dry land rice. After the floods there was suddenly a great need to plant dry land rice, but nowhere to get seed.

Table 1. Village perception of production strategies (10 is the most positive)
Con Tom village group discussions

Strategy	Low production risk	Appropriate for livelihood security	Suitable for the poor
Make use of all available land	10	10	10
Cassava	10	10	10
Dry land crops (maize, beans, vegetables, sweet potato)	9	9	6
Dry land rice	8	8	4
Poultry	7	7	5
Fish raising	5	8	5
Pig raising	9	9	7
Paddy rice	9	8	6
Expanded paddy rice fields	7	5	3
Garden development / fruit trees	6	10	4
Cattle	8	9	3
Bamboo against erosion	9	10	8
Plant indigenous tree species in the areas planted with exotic forest species.	5	7	3
Strengthening the irrigation canal system.	9	10	6
Build drainage systems around the gardens	8	10	7
Develop hill gardens / forest gardens	6	8	4

Pig raising maintains a high score despite the problems with diseases after the floods. People still believe that the disease situation is manageable and consequently pig raising generates the high score due to the strong interest in this activity.

Garden development receives a good score for being the strategy of the future, but a bad score for risk, mainly due to the market risks. The low score on suitability for the poor has to do with the difficulties of obtaining seedlings, and the high knowledge requirements.

Planting of bamboo is seen as a good investment both from an environmental point of view and as a source of income, which is also accessible to the poor. The motivation to plant bamboo against erosion has increased significantly after the floods.

Planting of indigenous tree species is raised as a way of increasing the economic value of the forest plantations, which at present are just mono-culture of acacia mangium. This is part of the more active interest that people are taking in using the forest as a resource for the community, instead of just being the no-go area under the control of the province Watershed Management Board.



Meeting during our fieldwork, Pa Rinh village, Hong Ha commune

2.3 Institutional factors influencing household recovery

2.3.1 *Securing food needs*

Most of the immediate food security needs after the floods had to be met by relief deliveries. The State and the Red Cross mobilised support nationally and internationally. The first delivery of food and other necessities arrived in Hong Ha by helicopter from the district centre on the seventh day after the floods began. Several deliveries arrived during November-December, amounting to 60-80 kg of rice per family plus noodles, MSG, blankets, mosquito nets, clothes and other necessities. From January to June the Commune People's Committee and Party leaders did an enormous job in mobilising support, approaching all kinds of organisations in Hue directly to ask for help. In total the commune received almost one ton of rice per family, so food supply was secured. Mutual support is also part of the tradition. The local mass organisations mobilised contributions of food, which was then distributed to the people in most need.

In order to recover food production as soon as possible, there was mobilisation to plant various vegetables and beans, with the seed support from the district and the Hue University of Agriculture

and Forestry (HUAF). Vegetables such as pumpkin and squash were a success. Beans were more difficult because of diseases. People's interest in growing vegetables is increasing, but there is no established institution for farmer access to seed during normal years. Bioseed maize is available, but it is mainly intended for animal husbandry production. Bioseed maize is harder to digest than the local maize, but during the food shortages many people ate it nevertheless.

By June 2000 the basic food security situation was again stable. The June harvest was good, around 3 tons per ha. The rice harvest in September-October was partly affected by fungi- and insect problems. Because of the large effort required to recover the paddy fields, the winter-spring crop was not planted until March. This postponed the harvest period of the summer crop until mid-October. People were worried about not being able to harvest in time before the floods, but luckily there were no major floods in this area in 2000.

The traditional sources of local rice seed have, previous to the floods, received little attention. After the floods there was a problematic shortage of seed for dry land rice and there is a growing awareness of the need for seed banks and also storage of the local seed. Mr Son from the district Agriculture Section stresses the need to maintain the genetic diversity of rice seed. There are at present 25 varieties of dry land rice, which are common in the district. There is also the need for research into short-term rice varieties. The seed research centre in Thua Thien Hue province has so far concentrated research on rice for lowland conditions. The University (HUAF) is however supporting trials on short-term varieties for upland rice.

Securing paddy production is still the main strategy for food security

Despite the risks of paddy production, it still remains the first priority at all levels, household, commune and district, both for the immediate coping strategies after the floods and for long-term food security. Both the district and commune mobilised all efforts on rehabilitating the paddy fields and repairing the damaged infrastructure to secure rice production.

The district has received a greatly increased budget for improving the water management system, 3.5 billion VND, as compared to the normal budget of 150 million VND. The State programme '135' funds are allocated for this purpose, in particular for the irrigation canal system. The emphasis is on high quality and stable structures, which implies a slower pace in investments, but it means that they will be strong enough not to break in every flood. The irrigation infrastructure is however still vulnerable to flood damage and there is local discussion on what level of investment is reasonable.

Hong Ha commune received support immediately after the floods for the rehabilitation of the irrigation system in Con Tom village, including the strengthening of the canal system with cement to avoid erosion by the floods. In 2001-2002 the commune is receiving support for the repair and upgrading of the irrigation system in the Khe Ca Te area, which services four villages including Pa Rinh. By the end of 2002 they will be able to irrigate and cultivate eight more hectares of paddy rice.

Paddy production was introduced in A Luoi after 1975. Now it is regarded as the core of the household economy.² For paddy rice to be a core in people's food security higher yields would be required. So far people have been reluctant to invest a lot in seed and fertiliser. There has also not been any functioning system for access to inputs. Immediately after the floods the input supply for paddy production was better than normal as the district Agriculture Section supported the commune with seed and fertiliser. In 2001 the input supply situation was back to normal again, which means a quite limited level of access to inputs. The State Input Supply Company has only as late as 2001 opened a station at district level. The commune is discussing plans on how to

² A Luoi district is self sufficient in rice to 50 %. Every year 4000 tons of rice is imported to the district.

establish an input supply service at commune level. It would require a credit system, whereby the farmers can access inputs on credit and pay after harvest, as people have very little cash.

2.3.2 Land management

Land redistribution

The land allocation of paddy and garden land is fixed, even though the formal papers (LTCs) have not yet been issued. The allocation of land for dry land crops is so far more informal, which leaves room for adjustments to compensate households who have lost land in the floods. This would happen through the organisation of village councils where all the households can take part and negotiate the redistribution. Con Tom village had a buffer of 1.5 ha of land along the river, which has been allocated to 30 households. The need for the village and commune to maintain some flexibility in the allocation of land needs to be considered in the ongoing formalisation of land allocation. With the resource base changing as a consequence of floods and erosion, fixed land allocation may result in inequalities in the long run. The commune authorities favour a system of allocation of some land to the commune, whereby some flexibility can be maintained in adjusting to changing conditions. At present there is no legal framework for allocating resources to groups, whether a commune, co-operative or other type of group. There are however pilot activities ongoing preparing for a government adjustment of the land law to enable commune management of natural resources.

Moving to new areas

Many households who have lost land are moving to a new area, which is being developed along the Bo River some kilometres to the south-east of Hong Ha commune. The Department of Fixed Cultivation and Fixed Settlement is building a road and providing the households with seedlings for garden production. People receive 0.5-1 ha of land per household. Forty households from the commune have moved there already to start a new life. The people starting up cultivation in the new area are two categories of households. The first is families who move there to 'start from scratch' because they can't make a living in their old village. The second is families with knowledge and resources to develop production in the new area as a side income. Living conditions in the new area are still difficult, with no proper houses yet, no electricity, and water supply at a distance. The area can provide an income for the families in the long run, from fruit trees, pepper etc., but the immediate sustenance needs are still a problem. Households are not allowed to open up swidden fields, but they have gardens for cassava and vegetables. Much of the responsibility for developing the new land is shouldered by the commune leaders, who have to mobilise the resources for making the area liveable and able to support the households. The staff of the commune People's Committee spend a lot of their time helping people to get started and organising contacts with suppliers and traders of fruit tree seedlings and other inputs. People are aware of the risks involved, as the markets for fruit trees and pepper are not yet developed. The support from 'Fixed Settlement' however makes people feel that they have nothing to lose and that they might as well try.

Production of cassava has expanded greatly with the development of the new area, even to the extent that it is now a cash crop. The State has established a support price for cassava and maize to enable the mountain population to be competitive with the lowland farmers. Cassava for animal husbandry is also expanding as new techniques are being introduced for processing the leaves, and for the growing of high-bulk varieties, suitable for fodder. Again it is the University (HUAF) which is developing and introducing these new techniques, in collaboration with the farmers in Hong Ha commune.

Agro-forestry development

Hong Ha commune chairman, Mr Hua, shows us on the map the development ideas of the commune. The low-sloping hill land close to the residential areas is currently planted with forest trees. These areas could be harvested in order to make way for agro-forestry gardens with fruit trees, bamboo, vegetables and cassava for both income generation and food security. The decision to harvest planted forest must be taken by the province People's Committee for up to 20 ha. Above 20 ha the decision must be taken by the Ministry of Agriculture and Rural Development. The commune has made a proposal to the Province to harvest the forest close to the settlement. The response from the Province has been to suggest to the commune to plant rubber trees there instead. Rubber has so far not been tested in A Luoi, only in the neighbouring district of Nam Dong. Mr Hua thinks that they might as well try the Province proposal. They can always plant cassava in between the rubber trees for the first few years.

The hill slopes above this area are not yet planted with forest. Mr Hua suggests that this land could be allocated to households for forest planting, to compensate for the cleared forest below. The area should be allocated to households for forest planting and management. This way the forest contributes to the economy of the households and they are better motivated to manage the forest. The commune ambition is to build capacity to raise indigenous tree species, for the households to enrich the forests and improve the long-term economic value of the forest.

The increased attention to developing agro-forestry on the hill slopes is thus inspired, both from a food security and reduced vulnerability perspective, and coincides with the trend for garden production and industrial crops. Hopefully, the strategies can be combined in the development of production, which would include both garden crops for market orientation, economic forest tree species and food crops for subsistence.

Land use planning and land use rights

The whole area around Hong Ha commune is defined as watershed area. A large part of the area is allocated to the Bo River Watershed Management Board, under DARD. It thereby lies outside both the insight and influence of the commune and district authorities. Part of the forestland is under the management of the district Forest Station and part under a State Forest Enterprise. Paddy land and garden land is allocated to the households. Some dry land agriculture areas around the commune are temporarily under the management of the commune and informally allocated to the households.

Several issues regarding land use were raised in the discussions at commune and district level:

- People do not have a secure livelihood from production on the riverbeds. Attention is turned towards the lower hill slopes for supplementing food and cash crop production.



Mr Hua, Chairman of Hong Ha People's Committee

- There is a lack of definition of which land could be available to the commune and households for development initiatives. This causes a sense of insecurity and of lack of resources.
- There is no clear analysis of which areas should have a forest cover from a watershed protection perspective, and which areas could be developed for agriculture or agro-forestry purposes. Certain areas of forest plantation are believed to have potential for agro-forestry development for the benefit of the community.
- There has been insufficient research on sustainable agro-forestry options suitable for the environment in A Luoi.

The District People's Committee and relevant sections for agriculture, forestry and land management are in agreement on the need for land use planning and defining land use rights. An overall land use plan is being prepared by the Province Department of Land Management. The plan divides the land into five categories: Agriculture, Forestry, Special Use, Residential and Unused land. The province has delegated the responsibility for commune land use planning to the district, but at present the district does not have the resources. On the basis of such land use planning the appropriate forms of land use rights and management structure for commune, household and the State management are expected to be defined.

There has so far been very little development of agro-forestry on sloping land. Practically all the sloping land has been seen as land for forest tree planting. The Watershed Management Board and the Forest Enterprise have not shown any interest in developing forms of agro-forestry from which the community living in the area can benefit.

Mr Son, Agriculture Section:

We develop the forest in order to reduce the impact of the floods. But there is too little research into how to plant and in which areas to plant in order to be effective. People will destroy the forest if they don't have enough land for agriculture production.

The district land management officer is hoping for the possibility to work out a land use plan together with the commune, which to a larger extent makes use of commune and household potentials of developing the land.

Mr Tan, Land Management Section:

There are large areas where the land use rights are not clear, which causes conflict. We need to co-ordinate between all relevant organisations in the planning process. We need to organise the land use planning process directly at commune level together with the commune staff in order to be effective. We have to increase the capacity of the commune cadastral staff. At present people don't have any rights in relation to the forest they have planted. That is not suitable for development of the forest.

There are different interpretations of the purpose of land use planning. The district Land Management Section concentrates on land allocation and the overall definition of which land is agriculture land and which land is forestry land. The Agriculture Section is more focused on the need to analyse which land is suitable for which crops and plants. The overall province land use plan, which is being prepared at present, is specifying the areas for development of industrial crops according to the five-year plan. This means that large areas are specified for coffee, pepper, pineapple etc. in the overall plan, in which the participation of the commune is very limited. The plan can however be modified from year to year according to the changing circumstances.

Land use planning also involves re-planning the residential areas so that they are at less risk of flooding. An area of 12 ha of planted forest in Hong Ha commune was originally harvested in order to give way to sugarcane production, but after the floods the commune decided to use it as

residential area for people in Con Tom village whose houses were too close to the river. The district had the mandate in this case to approve the commune proposal for change of land use, because the forest was planted with international funds, not with Vietnamese State funds.

2.3.3 Forest management

The forest planting efforts after the floods concentrated on planting trees to protect the road from landslides. Funds for forest planting were allocated from national funds for disaster mitigation to the Bo River Watershed Management Board, under DARD. The forest planting plan was made by a team from DARD and by the Board staff, without any consultation with either the district or commune or village. The district, commune and village are only informed after the province authorities have already approved the planting. The plan includes the area to be planted and what species to plant, often just one exotic species (*acacia mangium*).

In 2000 the Watershed Management Board and DARD designated an area of 172 ha for forest planting in Hong Ha commune. 58 ha were offered to the commune for planting contracts with individual households. The rest is on contract between the Board and private individuals or companies outside the commune, who in turn contract labour for planting and tending.

The allocation of forest management to the Watershed Management Board causes several problems. The contracted parties outside the commune have no direct relations with Hong Ha commune People's Committee, which restricts the possibilities of long-term decision making and development strategies regarding land use and forest management in the commune. The People's Committee does not even know which land they will have access to for the coming season. The commune is inhibited in initiatives for planting bamboo or indigenous forest species for protection of the agriculture and residential area, because the same land can with short notice be claimed by the Board. The households are reluctant to invest in the land in case it is claimed for forest planting, sometimes with growing crops, which have to be harvested prematurely. Hong Ha commune is thus requesting more management responsibility over the forest area in future. They are supported in this request by the District People's Committee.

This top-down approach to forest planting is not the norm. State forestry programmes under decree 661 are more open to community forest management, and the commune and district normally take part in the initiative and decision-making process concerning forestry investments. Hong Ha commune, being defined as a watershed management area, however follows other regulations.

The mandate of the district Forestry Station is to protect the natural forest. Previously their mandate also included forest management and development issues and they have a broad network of forest staff at all levels, including commune level. Now their mandate has been narrowed to protection only. The district Forest Station sees it as a pity that staff capacity cannot be used to develop forestry and agro-forestry land use together with the commune. The Forest Station also emphasises the need for a clear land use plan. They suggest that the agriculture land should be planned first, in order to avoid the forest planting taking over land which could be used for agriculture. They stress that when people do not have enough land for their living it will be more difficult to protect the forest.

2.3.4 Cash crops and garden development

The economy of Hong Ha commune is still almost completely a subsistence economy, with very little market contact. This is gradually changing. People feel increased pressure to have a more diversified income to be less vulnerable to the loss of the food crops.

There has been a series of efforts by the State to find profitable export oriented crops. Large investments have been made in coffee and cinnamon without much success. The combination of

the floods and the market flop for sugarcane has reduced the farmers' trust in relying on one major export product.

Mr Thanh, Hong Ha commune People's Committee says:

The sugarcane project was supposed to be a poverty alleviation project. We all mobilised a lot of effort for it. People took loans to develop sugarcane. Now they are in debt and they don't know how to pay back.

The Fixed Settlement Department is now focusing on encouraging production of pineapple and pepper. Inputs for planting are provided as credit in kind, under conditions that are not fully clear to many households. People are cautious, but when inputs are provided, they often decide to give it a try. There is however an emerging tendency and greater discussion within the Extension Services to pay more attention to responding to demand instead of issuing mass scale production recommendations.

Mr Son, Agriculture Section:

We are developing pepper production and many people are planting pepper. But there is not enough capacity for technical guidance on where and how to plant pepper in a sustainable way. Often the pepper is planted on low-lying land and gets inundated and dies. It's a similar situation with coffee development. We had a district seminar to evaluate the potential of different crops. Persimmon, lichi and sweetsop have potential for development. Sapodilla is not suitable. Citrus has very low yield. We are still hoping for coffee and cinnamon. Cinnamon has a potential for its valuable wood, even though the bark has not been a market success. We should plant fruit trees and bamboo mixed with the forest species.

The commune and village have very few staff who can help the farmers with production development. Mr Xuong is a successful farmer who was previously responsible for agriculture development in Hong Ha commune People's Committee.

Mr Xuong:

There is no lack of land if people knew how to use it. We should allocate clear responsibility to people who can work with spreading knowledge. People don't invest in new seed and ways of improving the land, both because they don't have the resources and don't have the knowledge. I used to sell inputs on credit, but people don't have the possibilities to pay. If we have training for some people, then the others will follow. It is very difficult for people to get credit or other capital for investments. We don't have any way of solving this yet. There is a large potential for garden development if we would invest.

2.3.5 Access to credit

It has been difficult for people in Hong Ha to access credit for recovery after the floods.

State credit funds of 5 billion VND were made available to A Luoi district for 'Recovery after the floods', through the Bank for Agriculture and Rural Development. Hong Ha commune say they have received 52.5 million VND. In Pa Vinh village, 42 households applied for credit after the floods, but only three households received credit and then it was only for fish raising. The people in Pa Vinh say they were given no information on application procedures or what type of credit was available. The Bank refers to directives from the Province, that the credit should be short-term credit, mainly servicing the recovery needs for the fisheries according to the estimate that the main loss of sources of income generation has been in fisheries. Hong Ha is considered by the Bank (VBARD) to be a high-risk area, mainly because of lack of knowledge, experience and inputs. Hong Ha commune is less business-oriented than the communes closer to the district centre.

Formal credit has thus played a relatively minor role in recovery for people in Hong Ha. The lack of provision of credit reflects a lack of recognition of the economic value of the losses in the

mountain areas. People without enough household labour applied for credit to hire labour to recover land and production, but this was not granted. Others applied for credit for recovery of animal husbandry lost in diseases after the floods, but this was not seen as a flood loss. Some people have difficulties in reinvesting because the animals were purchased on credit, and now they are in debt and cannot pay. People applied for credit to repair and strengthen their houses, but credit is only available for production purposes. Instead many people take out private loans from relatives for house construction.

The 'Bank for the Poor' issued credit to 60 households in the autumn of 2001. They all received 2 million VND each for animal husbandry. The HUAF University supported with training and veterinary medicines for vaccination. Students from the University supported with extension and advice.

State poverty-oriented credit funds are increasingly channelled through organisations other than the Bank for Agriculture. The district funds for 'employment creation' (decree 120) are channelled through the Treasury and the Farmer's Association. District credit funds are channelled through the Women's Union. At present there are 16 communes including Hong Ha involved in credit programmes through the Women's Union.

The commune has a revolving credit fund from the German NGO 'SMIT'. It can sometimes be difficult to recover this credit, but it is still an advantage when the commune controls the credit. The commune organisations have a clearer picture of people's capacity to repay and how to schedule the repayment in an appropriate way.

2.4 The role of local government and local organisations

2.4.1 Coping

The crisis sparked a spirit of mobilisation at all levels. The commune authorities and local organisations became very active in the process of organising support to cope with the crisis and this spirit of activity has continued in support of the efforts of the households to safeguard their livelihood.

The mass organisations at commune and village level were active in organising mutual support. The households contributed rice and 5,000 dong per household to a fund which was distributed to the people in most need. People organised labour teams to help each other to recover the land. There were frequent village meetings on how to handle the crisis and people in the village look out for each other and support each other. It is socially very important that the leaders of the village and commune organisations visit as many households as possible to see how they are, and show that they care.

The commune People's Committee and Party leaders also had to represent the commune in mobilising support from outside. After the floods, Mr Hua and Mr Nam walked the 23 km in deep mud to the district centre to inform the district leaders of the situation and ask for help. Later they visited every organisation they could think of in Hue to mobilise support for the recovery. The People's Committee was also responsible for how all the emergency relief of food and clothes and necessities was distributed among people. Mostly they distributed the resources equally to all, rather than according to need, in order to speed up the distribution. The commune People's Committee were also responsible for organising the distribution of seed for rice, beans and vegetables and fertiliser, supplied by the district Agriculture Section as relief support to mobilise production.

Table 2. Assessment of the role of commune and district organisations after the floods (Pa Rinh village discussions)

Organisation	Scoring	Activity	Comments and proposals
District and province organisations			
Red Cross	10	Relief support (housing, food, water, blankets, mosquito nets).	Should target the support better, and concentrate on the households who need it most.
Welfare organisations (Buddhist and Christian)	10	Relief support (food, medicine, clothes, money).	The clothes should be clean and not worn out. Hesitant on whether there are of 'strings attached' to the support.
District Agriculture Section	10	Seed, technical support.	Very valuable seed support.
District Women's Union	7	Rice and milk for women and children. And schoolbooks.	Very little physical presence from the district WU at village level.
Hue Agriculture University	10	Relief support of food, seed, fertiliser, funds.	Very valuable support.
Bank for Agriculture and RD	6	Credit for recovery of production.	Should have more clear information regarding what it is possible to get credit for, and about credit procedures. We need medium and long-term credit. One-year credit is too risky.
Bo River Watershed Management Board	8	Labour opportunities in tree planting.	The planting very far away, so not so many households registered for planting.
Commune organisations			
Commune People's Committee	10	<ul style="list-style-type: none"> Mobilised support from outside. Distribution of support according to need. Mobilised us to recover production. Support for the poor for Tet. 	Without the People's Committee we wouldn't have any commune at all. The PC should establish a welfare fund.
Farmers Association	10	<ul style="list-style-type: none"> Mobilised us to support each other. Fund – 5000 d/ household. Direct visits to the households. 	
Fatherland Front	8	<ul style="list-style-type: none"> Co-ordinate and encourage the work of the other org. Visit households in trouble. 	They should take the lead, more than they do today.
Village	10	<ul style="list-style-type: none"> Guide everything in the village. Organise how we help each other. 	We need a better meeting room, with more seats. Often we are so many, that many have to stand.

2.4.2 Recovery and development

The households in Hong Ha commune are very articulate in their assessment of the work of the commune and district organisations, and they have clear demands and expectations of the services that these organisations should provide (see table 3).

The households are critical of the district organisations and services for their low presence at commune level. This is not surprising, as district staff are few and the mountain communes are many and are separated by long distances. The households are most critical of the district Forest Station, since their mandate changed from including forestry extension to being purely forest protection. They express disappointment with the lack of response from the Forest Station on household concerns regarding land use and forest management issues.

The commune authorities pick up on the household concerns in their demands. They argue for increased support for the commune to establish services at commune level and become more independent of the district staff. The Commune People's Committee is increasingly active in formulating development plans for land use development, organisation of input supply and training of commune extension workers.

There seemed to be coherence between household concerns and People's Committee plans and demands. In the village discussions the People's Committee was mainly criticised for not recognising and spending more time on developing the potential of the poor and handicapped.

Commune and district organisations have also been expressing a relatively homogenous view on natural resource management and development requirements. The communication gap tends to be larger in relation to the province authorities. In terms of production services the commune however tends to have more contact with province organisations, than district, at present. Staff of the 'Fixed settlement department' come regularly to advise on the development of the 'new area'. The University (HUAF) has a lot of contact with Hong Ha commune and this includes research co-operation and provision of technical support. This is however financed by international co-operation with Canada. The University staff and students could be much more of a valuable resource to many communes if they had State support for these activities.

There has been an increase in commune self-confidence regarding management of resources. A few years ago Hong Ha commune implemented government programmes less critically. As the commune is relatively newly established in this area (they lived further up in the forest during the war, until 1975) and poor, they appreciated any attention that they received from outside. Three years ago, when the Government mobilised for the planting of sugarcane, Hong Ha commune was one of the most ambitious. Eighty percent of the households planted sugarcane on the most productive land along the river. Part of the sugarcane was lost during the floods and part of it was never collected by the factory trucks. Both the commune and the district authorities now take a more critical stand in land use planning. But there is still some kind of 'no-harm-in-trying' attitude, for example now that the Government is proposing that the commune plant rubber trees.

The Government Decree 29 on grassroots democracy (1998) places emphasis on commune management of resources and participation in decision making and there is a move towards allocating larger responsibility to the commune organisations regarding State investments. For recent investments in the Hong Ha irrigation system, the Commune People's Committee controls the investment and arranges for construction contracts.

Table 3. Village perspectives on organisational relations for long-term development strategies, Village meeting Pa Rinh

Organisation	Scoring	Activity	Comments and Proposals
Red Cross	10	Mobilise mutual support groups. Mobilise annual member contributions.	Many people take part and contribute. The Red Cross pays continuous attention to the situation in the village.
District Agriculture Section	6	Extension and seed supply.	Should have more direct guidance at household level and more often. We need an input supply service at local level. We get seed according to the plan of the district. We don't know how much we will get.
District Women's Union	7	Family planning. Credit.	Too little presence at village level. Now that the road is good they don't have any excuse for not coming to see our situation. We need more credit for crops and animal husbandry, with low interest rate.
Hue Agriculture University	10	Guidance directly to the households. Training, trials and inputs.	High commitment and high sense of responsibility. A lot of positive production changes because of the university. But what happens when the project finishes? Will you still come and see us? We want more advice on garden development and then help with the marketing. We need more research on hill land development.
Bank for Agriculture and RD	8	Credit for production.	We need long-term credit and more guidance on credit use.
Fixed Cultivation and Sedentarisation Department	10	Managing the '135 programme'. Development of the 'new area'.	The road investments have not been good enough. Not enough drainage structures. Need more stable irrigation investments.
Bo River Watershed Management Board	8	Labour opportunities.	We hope to get income from harvest of the forest also, but probably we won't. We need to know longer in advance about the land use and tree planting plans. We should change the forest land, which planted close to the residential area, to a mixed cropping system.
District Forest Station	8	Guidance and permissions on exploitation of wood for housing and areas for swidden cultivation.	They should not be so suspicious of us. They always think we have the wrong purpose. They are not interested in our livelihood situation, only in the forest. The past 3 years we have not received any guidance on where we can cultivate. They should reduce the fees for extracting wood for housing. There is a lot of paperwork and procedures for us to cultivate land that we have cultivated traditionally for a long time. They are very slow at reacting when we discover outsiders extracting wood. They should not make a profit from the wood that they confiscate.
Commune organisations			
Commune People's Committee			The PC should give even more attention specifically to the poor and handicapped people on production issues. The PC should use and encourage people's cultural capacity more.

2.5 Proposals and policy recommendations

The following proposals were put forward during village, commune and district meetings. The proposals originate from village and commune level and have been discussed and elaborated at district level. The district authorities support commune demands for greater commune control over resources. The main district proposal concerns resources for district land use planning in co-operation with the communes. The concept of land use planning in this case includes research and analysis of suitable production systems on different types of land. Below we compare the commune proposals with the government strategies as expressed in the IPRSP (Interim Poverty Reduction Strategy Paper) and support policies after the 1999 floods.

To reduce the impact of the floods

- To review the requirements for watershed protection.
- To support the communes to stabilise the soil along the river banks with bamboo planting.
- To support people to invest in stronger, safer houses.
- To provide credit for safer stalls and styes for the animals.
- To improve water management infrastructure to reduce damage by the water flows.

To improve recovery after the floods

- To improve commune storage of seed, food and necessities.
- To provide extension of processing techniques for storage of cassava.
- To provide support with machinery to dig away sand and stone from the fields.
- To develop non-timber forest products such as rattan, mushrooms, medical herbs, leaves for making hats etc.
- To extend access to credit for recovery to poor households, on a three-year term.
- To employ local labour in community works.
- To support community revolving credit funds.

To reduce vulnerability to crises

- To evaluate the possible use of the hill slopes for agro-forestry development. To clarify land use rights.
- To support the district and commune land use planning process financially and with research support and expertise.
- To research sustainable land use options on the hill slopes to allow for more agriculture production.
- To increase research on short-term rice varieties.
- To support community and household management of the forest land close to the settlement.
- To include commune and district participation in watershed management and planning.
- To support community organisations to organise input supply including local stores for seed, fertiliser and chemicals.
- To train commune veterinary and extension workers, under the Women's Union and Farmers Association.

- To support the University (HUAF) to enable the students and teachers to have regular contact with the communities for extension support and farmer participatory research.
- To support diversification of production and income sources.
- To allocate part of the land to the commune, instead of directly to the households, in order to maintain some flexibility when the land resource changes.
- To improve the medical insurance system.

The proposals from the commune and district are fairly consistent with the government policies for disaster mitigation and recovery. There are however certain perspectives, which do not yet receive adequate attention in the government strategies.

Reducing the impact of the floods

Tree planting is the common response to reducing the force of the water flows, which naturally remains a valid approach. Our study suggests a more careful analysis of which areas need forest cover in order to provide adequate watershed protection. As competition for land resources is increasing it is important to have a clear analysis of land use potential.

Production close to the river should be limited, but that is often easier said than done, with the limited access to land. The increased risks that the mountain population are exposed to when focusing production on the riverbeds (instead of on the hill slopes), needs to be recognised and mitigated.

There are large government investments in stabilising the riverbanks with cement, in places which otherwise threaten the road. The planting of bamboo to stabilise the riverbanks has long been carried out by the mountain communities to avoid riverbed erosion. A proposal is to include bamboo planting in the present programmes for tree planting, to make it more affordable to the commune to invest in bamboo planting.

Improving recovery after the floods

The need for commune and district seed banks, for a wide variety of seed, could be developed further. There was a lack of seed for dry land rice, as district services concentrated on paddy rice. The loss of cassava was a serious threat to food security. Techniques to process and store cassava would provide an important food buffer in times of crisis.

The enormous labour investment that was required by the people to recover their land, should be recognised. One option might be the provision of bulldozers to help them clear the land.

The resources which especially poor people draw on in order to cope with the crisis could be given more attention. They include the income from minor forest products such as leaves, rattan, bamboo, firewood and medical herbs. Such sources of income could be more systematically developed.

State credit for recovery was provided through the Bank for Agriculture and Rural Development. If the purpose of the credit really is to provide conditions for recovery, it would need to be available for at least three years and would be for purposes of replacing loss, as well as for income generation.

Reducing vulnerability to crises

The main line of argument from the households and commune to reduce vulnerability is to spread risk. Ways of spreading risk include:

- Cultivation in different types of places, with different types of risk picture.

- Cultivation of many different crops.
- Not to concentrate household investment on one particular source of production.
- Preservation of local seed and trials with many different types of new seed.

Reduced vulnerability is very much connected with institutional improvements and a larger degree of commune control over resources. There is a demand for policy decisions that would clarify access to land and entrust land to the households and commune, rather than to State enterprises and State management boards.

Secured cassava production is seen as the main guarantor of food security and reduced vulnerability. Cassava is not considered to be risky if planted on sloping land which is not so easily inundated. There is a demand for policies to support the commune and district to develop sustainable forms of agro-forestry land use on the sloping lands, which would both satisfy the need for cultivation of cassava and integrate it with crops and trees of economic value. The district services are relatively far away (23 km uphill by bicycle. There are two motorbikes in the commune). Improved commune capacity in extension, veterinary services and input supply would reduce overall production risks.

3 Hai Lang District, Quang Tri Province

3.1 Impact of the floods

The impact of the floods varied in the lowland and hill land areas of Hai Lang district. Most badly hit were the villages close to the large rivers where the wind and the waves impacted hard on the houses. Most damage came from the fact that everything was under 1-2 metres of water for several days. In the hilly areas the floods were more flash flood in character, but the inundation damage was still severe enough to cause large losses of garden crops, such as pepper and fruit trees and cassava. The loss of income from pepper constituted the largest loss for many households. Cattle died both in the floods and of diseases after the floods, which also undermined the resource base of many households.



Trying to plough in time. Better drainage would be helpful.

For the lowland population the largest blow to the household economy was the loss of, and damage to, the rice that they had stored in their houses, depriving them of both food security and main income for the year. People lost between one and five tons of rice per household. The dike and canal system was damaged which caused increased insecurity in production. The second most important source of income, animal husbandry, was badly affected. Almost all households lost pigs and poultry in the floods and in the epidemics after the floods. In Hai Lang district 30,000 pigs drowned.

Twenty-nine people in Hai Lang died, many of them because they were trying to rescue other people. The most dangerous thing to do during the floods was to try to move around, as the force of the water was strong and this was combined with strong wind, high waves and cold water temperature.

The fieldwork for this study was done in Van Tri village, Hai Tan commune and Phuoc Dien village, Hai Thanh commune, which are both lowland communes and Xuan Loc village, Hai Chanh commune in the hill land along O Lau River.

Mr Nguyen Huu Thanh and Mrs No, Van Tri village, Hai Tan:

We are five people in the family. We have two small children and my mother is also living with us. On the afternoon of the 2nd of November 1999 the water started rising in the house. During the night the water rose to 1.5 metres. The wind was fairly strong and the waves were high. I stayed in the house, sitting under the roof for three days. The family sought refuge in a neighbour's house on higher land, but they also had to sit under the roof. All the houses in the village were flooded up to 1-2 metres. Tables, chairs and household utensils were pulled away by the water. We were able to find some things later. We lost 2 pigs and 50 ducks and chicken. One ton of rice was wet and spread all over. Part of the wet rice was still possible to eat after being dried, but with low nutritional value and nasty smell, and some rice could be fed to the neighbours ducks and pigs. The house was damaged and the roof over the kitchen and pigsty collapsed. The house was filled with mud.

We have 3,500 m² of paddy land and 250 m² of garden land. The autumn harvest 1999 we got 2.1 tons of rice. After paying back credit for production inputs and loans for food, we still had 1 ton of rice. We kept the rice in the house to provide food for the year until the next harvest in May. A lot of this rice was lost in the floods.

3.2 Household coping strategies and capacity to recover

The most urgent issue was how to ensure access to food for the seven months until the rice harvest at the end of May. Support in cash and kind, from all kinds of national and international sources, was channelled through the District Board for Flood Relief under the People's Committee. During the first days of the floods, the Hai Lang District People's Committee organised the distribution of noodles, cooked rice, clothes etc. from their own funds. Gradually more support reached them from outside sources. Hai Lang received around 15 billion VND (approx. 1 million USD), in cash and kind. This can be compared with the damage and losses, which were valued at 159 billion VND (approx. 11 million USD). Rice support was distributed in several batches. The first delivery was distributed equally to all. The subsequent deliveries were distributed according to classification of the households, conducted at village meetings, into three groups of households, depending on how badly they had been affected by the floods. Each household received between 150-250 kg of rice, which lasted two to three months.

The remaining period before harvest was handled with a large degree of mutual support between the households. People lent or gave food to each other. Vegetables were planted immediately with seed support from the district. Many households, especially in the lowland communes, took loans of rice, to be repaid after harvest. In the hill land communes people survived day to day by collecting firewood to sell or working as day labourers.

In the lowland communes, people have few alternative income sources to rice. Individual household efforts and the whole institutional structure are concentrated on securing the rice harvest. Recovery of rice production was supported by infrastructure investments, credit for inputs and subsidised seed from the district. People are very vulnerable to failures in the rice harvest. There was hardly any surplus from rice production in 2000 because of the high production costs for drainage and replanting. Heavy rains in January and February caused inundation of the newly planted fields and people had to replant two, and in some areas even three times. The rice price in 2000 was lower than normal (1,200 dong / kg in Hai Lang). The crop in May 2001 was 30% down in quantity and quality because of heavy rains and flooding one week before harvest. It will probably take many rice harvests before people have recovered fully.

Almost all households immediately bought new piglets, either with relief grants or credit. There was however a very high level of animal epidemics after the floods. The pigs died, people invested again and the pigs died again. It took almost a year before the animal health situation had stabilised. This was despite intensive efforts by the veterinary services to vaccinate all animals after the floods. The environment was extremely polluted by manure, excrement and cadavers

floating around. The army and police force helped people in a massive action to bury the animals and clean the environment.

There were no epidemics among people after the floods, which was impressive. The district health centre, commune clinics and the Red Cross distributed medicine and disinfectants to purify the water. The clinics provided chemicals and monitored sanitary conditions. There is however a continuing health problem because of the polluted river water, which worsened after the floods. Neither of the villages in this study have clean water systems.

Housing

The experience of the floods was most traumatic to the lowland population, who did not have anywhere to go when the water level rose right up to the roofs of their houses. The strong wind caused fierce waves which made mobility difficult. A common reaction was to take out loans to repair and strengthen the houses, in order to feel less vulnerable to future floods. This is likely to cause future problems for many households, who have invested beyond their capacity to pay.

The Red Cross supported a few hundred households who had lost their houses completely, in building new stable houses. However, only a small proportion of the households were able to get help compared with the need. It is only people with employment and a stable income who have the possibility of obtaining bank credit for housing, and not the normal rural population.

Labour

Labour opportunities are an important part of the coping strategies of poor households. In the hilly areas many poor households work as day labour for other households in the commune. It is easy to find work: in the rice harvest, digging fishponds, in forestry etc. After the floods many people went to work in the sugarcane areas in Thua Thien Hue province.

In the lowland areas there are not as many day labour opportunities, except in the rice harvest, and the poor are often busy with their own rice. During the slack period between the crops many people go to work in Khe Sanh in the rubber and coffee plantations, or migrate seasonally to take part in the coffee harvest in Dak Lak province. Long-term migration for work is not so common, but some households have older children working in the tailoring industry in Ho Chi Minh City.

Community work is not normally seen in the context of employment creation. Labour contribution to local investments is more often considered as the part that local people can contribute to infrastructure investments where the Government (and donor) contributes the fiscal support for material costs. Likewise after the floods, the Government provided material support for reconstruction and the community provided labour. In the cases where labour is contracted for a salary it is up to the construction company to hire the labour as they see fit. In many cases migrant labourers from other provinces have been prepared to work for lower salaries than the local population.

Education

Education has not been seriously affected, despite significant material damage. Most families are still keeping their children in school, despite the difficult economic situation. The commune People's Committee and the district Education Section have together invested in the repair of the school buildings and in the replacement of lost furniture and school materials. The teachers worked extra without pay to help the pupils catch up the time they lost during the floods. The pupils are sharing books and helping each other to dry or replace the wet books.

Box 2. Factors influencing capacity to recover, Hai Lang district*Good capacity to recover*

- Diversified income structure. Not so dependent on income from rice production alone.
- Secure production conditions. Good water control systems.
- Capital buffers like buffalo.
- High sanitation standard for animal husbandry. No big disease problems.
- Possibilities of small daily income from collecting minor forest products.
- Access to labour income.
- Being part of a co-operative with well-functioning input supply and credit.

Difficulties in recovering

- Very dependent on mono-culture of rice.
- Risky production conditions. Insufficient water control systems.
- High levels of indebtedness through private loans with high interest.
- A series of failed production investments because of diseases in animal husbandry.
- High household expenses such as medical costs.

Source: Hai Lang district discussions

3.2.1 Van Tri village, Hai Tan commune

Van Tri village has 230 households of which 24 are fishermen and the rest are farmers, with rice production as their main income. Van Tri has relatively little paddy area (40ha), and little area for dry land crops (6 ha). The road that links them with the other communes and markets is low and narrow and flooded for several weeks every year.

Normally around 20% of the households in Van Tri are poor. The floods have however complicated the situation for many more households. Eighty percent of the households in the village are in debt to the Bank and many people have had difficulties in meeting their repayments. The village leaders estimated that around 40% of the households have taken out private loans with high interest rates, to repair and stabilise their houses. Most households would normally be able to sort out such debts fairly quickly, but the production situation after the floods has not been stable, and it will take time to achieve a stable economic situation.

Many people are worried about the credit for flood recovery, which is due to be paid back in January 2002. Most households do not have any source of income at this time of the year from which to repay. They would have wished for the repayment process to be spread out gradually and seasonally. As it is now, many may have to take out private loans to be able to make the repayments.

The insect attacks and the rains before harvest in May and in August 2001 reduced the harvest of rice by 20% and the dry land crops, such as beans, groundnut, chilli and sweet potato were lost completely.

Van Tri village is a low-lying area and is very exposed to the rains and flooding. It has a pump station, but would need another pump head and reinforced electric power to be efficient in draining the fields. District policies are to support 60% of investments if the village contributes 40%. This 40% is at present beyond the capacity of the households in Van Tri.

Mr Nguyen Huu Thanh, Mrs No, Van Tri village:

On the third day the People's Committee, the Co-operative and the Red Cross could reach us with emergency deliveries of food. The people of Hai Lang Township were cooking rice and packaging for delivery to us in the lowland communes.

When the water had gone down, the police and army helped us to dig out all the mud from the house. The Youth organisation together with the Red Cross helped us to basically

repair the house. We received blankets and kitchenware from the Buddhist community. The Women's Union and Farmers Association mobilised food support. We received medicine and disinfectants from the health station against diarrhoea and to clean the drinking water. During December and January we received 200 kg of rice and a big box of noodles as food support. After that we had to borrow one ton of rice from private lenders in another commune, with an interest of 400 kg of rice to be paid after harvest.

We received 200,000 VND as a grant from the district relief funds to buy two new piglets but they died in diseases after four months. We sold the chicken to buy new piglets. The garden production of sweet potato and vegetables is not enough for the pig raising and home consumption. The pigs grow very slowly, only 40 kg weight after 10 months. We bought new ducks and chicken, but they died.

For the spring crop in 2000 we received production inputs on credit from the Co-operative as usual. It was raining so much that the planting was delayed and then we still had to replant the crop twice. After the autumn crop 2000, we only had 400 kg of rice left after paying production costs and the food loans. The rice was finished by October. After that we borrowed from relatives. The spring crop in 2001 was bad, because of insect attacks and the rains before harvest, but the autumn crop was alright. Our rice debt is now 2 tons.



Mrs No, Van Tri village, Hai Tan commune

We have taken loans and credit to repair and strengthen the house, in total 2.5 million VND, from neighbours, the Women's Union, the Red Cross and a charity organisation. We are still worried about whether the house is stable enough to resist the floods. The wind and waves are so strong here.

Four years ago we took a loan from the Bank for the Poor of 2 million VND, but we had to use the loan for hospital costs and medicine. The repayment was postponed one year because of the floods. We have applied to continue postponing the pay back, but we still pay interest to the bank.

I have strong head aches and have to go to Hue for treatment. It costs about 50,000 VND per month. My mother is also sick of old age, but she does not go to hospital. We borrow from relatives for the medical costs. Mrs No makes traditional hats from which she can earn 3-5,000 VND per day.

At least we are not in debt to the co-operative. We are afraid to take more loans. Our hopes for the future are basically to be able to have enough food and gradually to invest a bit more in animal husbandry.

Box 3. Proposals from Van Tri village

- To support a veterinary service at village level. We need support to train somebody in the village, who could then work on contract for the co-operative.
- To provide credit for raising buffalo. Van Tri has a lot of grazing land.
- To provide credit and extension support for fish raising in cages in the river.
- To invest in the irrigation and drainage system to increase the pump capacity, reconstruct the old water gate, strengthen the canal system with cement, and increase the electric power capacity.
- To invest in a clean water system.
- To invest in a two-storey school-building so that especially the children would be safe during floods.
- To raise and improve the road linking us with the rest of the commune. At present it is flooded for several weeks every year.

3.2.2 Phuoc Dien village, Hai Thanh commune (lowland)

The households in Phuoc Dien village, Hai Thanh, have the most difficulties in recovering in the district. They live on the most low-lying land in the district. As in Van Tri, they are very dependent on rice and animal husbandry, which were both hit very hard in the floods and they suffered high costs for drainage and low rice price in 2000. The spring crop of 2001 was damaged by the rains before harvest. It was possible to sell around 70% of the harvest at 1,100 VND/kg. The dry land crops such as sweet potato and groundnuts were lost completely because of the inundation.

The dike system is too low compared to the neighbouring communes to be able to protect against the floods during crop season. When the dike was built it was the same height as the dike of the neighbouring communes on the other side of the river, but since then the others (Hai Duong and Hai Hoa communes) have raised their dike, and now the water overflows more easily into Hai Thanh.

People in Phuoc Dien are more in debt than in the other villages. Many people had debts before the floods and now their situation has become complicated. Households who get into difficulties have very small margins and resort to taking out private loans. Many households have loans for their house construction and are now overwhelmed by the interest payments. Mr Dang's family is in difficulties due to hospital treatment costs for their three children, who are all threatened by lameness due to 'Agent Orange' effects.

Phuoc Dien does not have such a strong tradition of community management. The co-operative input supply system has got out of hand. People are not able to repay the input credit to the co-operative after harvest and the co-operative does not have any means of sanction. There are too many people who are not able to make the repayments.

The animal husbandry situation is more difficult in Phuoc Dien than in other areas of the district. The polluted environment after the floods has given rise to a very difficult disease situation. The veterinary services mobilised all forces for vaccination, but this often did not help because the diseases were already established. There is also less of a tradition of vaccinating the animals here.

Mr Vuong Khanh Dang and Mrs Nguyen Thi Suong, Phuoc Dien village, Hai Thanh commune

I (Mr Dang) am 44 years-old. We have three children. We have 1 ha of paddy, but no other agriculture land and only a small garden. The rice was still on the floor when the floods came. 1.2 tons of rice was wet. One pig of 50 kg died. Another pig floated away, but was recovered alive. 20 chicken were lost. A lot of household utensils were swept away. The house was damaged.

We gave the wet rice to the ducks. A little rice we were able to dry for us to eat. We got food support enough for three months. We took flood recovery credit, 3 million VND



Mr Dang and Mrs Suong's family, Phuoc Dien village

which we used for rice inputs and two pigs and chicken. Both pigs and chicken died after three months. Then we bought new pigs again. We don't know how to protect them if there are floods again. We have repaired the house, for 500,000 VND.

We also used the flood recovery credit to pay interest on a private loan that we took three years ago to build this house, when we moved away from my parents house.

The loan is 3.5 million VND with 2 % interest rate, which is 70,000 VND per month. We only manage to pay the interest, we have not yet been able to pay anything on the principal. Household costs are 3 tons of rice per year and there is nothing left over to pay the debts.

In October 2000 we got a loan from the Bank for Agriculture of 3 million, which we used to pay back another private debt which we took in 1999 to cover hospital and medical costs for our daughter. All three children have diseases related to the 'agent orange chemicals' in my body from the war, which make them lame if it is not treated. The oldest child can hardly walk. We have a 'poverty reduction card' which reduces costs with 50%, but the costs are still very high.

The harvest in 2000 was alright, we got 8 tons from both harvest and around 1,300 VND/kg for the rice. We could pay back to the co-operative for the inputs and we paid the drought power. But we didn't get any surplus because of the high drainage costs, and we had to replant two times. The spring harvest in 2001 was worse. It rained heavily in May, one week before harvest. We only got 3 tons with low quality and only 1,000 VND/kg. The autumn harvest was alright, but we are still in debt to the co-operative because of the bad spring harvest.

We don't have any other sources of income part from the rice. We would like to try the new breeds of chicken, but we don't dare to take the risk right now. There is not enough grazing and fodder for cattle raising. Animal husbandry in general is risky. Too much diseases, even if we vaccinate. My mother has sapodilla in her garden. We would like to have more fruit trees. My dream is to have employment in town, so that I could have a secure regular income. Then we could do the farming as a side occupation and not be dependent on it.

Box 4. Proposals from Phuoc Dien

- To concentrate veterinary sanitation efforts on overcoming the continuous animal husbandry diseases.
- To create employment through the raising of the dike with economic support for the consequent commune labour wages.
- To upgrade the canal system to be able to both drain and irrigate all areas.
- To support new sources of income such as mushroom production on rice straw.
- To develop off-farm employment opportunities.
- To have a special credit and extension programme for the households most in debt to rehabilitate their household economic situation.

3.2.3 *Xuan Loc village, Hai Chanh commune*

The people in the hill land communes have generally recovered better from the floods than the people in the extreme lowland communes. The hill land people have more diverse sources of income from forest planting, minor forest products, buffalo raising and day labour. The fact that they have many small sources of income spread out over the year, makes them less vulnerable and they have to take private loans for sustenance much less often.

Mr Nguyen Duoc's family is poor. They were just escaping poverty with the income from the pepper and the fruit trees, but now they are back in difficulties again. They have very little paddy and they lost the cassava. They partly solved the short-term food needs by collecting firewood, broom material and roots in the forest. The wife is long-term sick, which both costs money and means a lack of labour. The need for labour to recover after the floods was even more important than money, and the daughter was called back from her work in the tailoring industry in Ho Chi Minh City.

Many families in Xuan Loc have children working in Ho Chi Minh City. Often they can send back around one million VND per year. This type of migrant labour is not in response to the flood crisis, but rather a long-term strategy, as there are better income opportunities for the young in the South than there are to be found by staying in Hai Lang.

Mrs Nguyen Thi Hy and Mr Thuong do not have paddy land at all. There are only three households in Xuan Loc who do not have any paddy, because they did not join the co-operative at the time when the paddy land was allocated. Previously there were more income possibilities from the forest, which they depended on. The availability of minor forest products is however decreasing and people's dependency on rice and garden crops is increasing. Damage to rice crops was one of the major outcomes of the floods and recovery credit was allocated according to the area of paddy land of each household. Mr Thuong's family was thus not entitled to credit. In 2001 they borrowed paddy land from farmers in Hai Chanh, but it was low-lying land outside the drainage system and they lost most of the rice in the May rains.

Most people in Xuan Loc receive their major income from the garden land, with beans, groundnuts and vegetables, and from animal husbandry. Xuan Loc is close to the market and it is easy to sell the products. Most people are also reinvesting in pepper and fruit trees, despite the risk of inundation in the floods. The better-off households who have pump irrigation in their gardens can establish the pepper and other crops on mounds, and provide irrigation during the summer drought. The people with low-lying gardens are afraid to invest a lot and are looking for other land higher up.

The district offers incentives and credit to people who want to establish hill land gardens higher up, with a combination of garden crops, forest trees and animal husbandry. So far it is only the manager of the co-operative who has established such a hill land farm. The main constraint for most households is the need to build a house and have at least part of the family living at the hill land farm, in order to protect it. It is also quite a large investment in terms of irrigation as well as the production itself. The district encourages people to establish groups for joint investment. The Land Management Section of the People's Committee is being integrated into the Agriculture Section in order to facilitate the procedures of land allocation for the new hill land farms. There are also households from the lowland who choose to start a new life in the hills, and who are allocated hill land. A group of households from Van Tri village are planning to move and start a new village in the hill land of Hai Lam commune.

Many households in the village have an income from forest tree planting. Everybody who has enough labour is taking part, with 1-2 ha per household. In Xuan Loc village they had not yet planted when the floods came in 1999, but planted soon afterwards. The households had their

first income from the planting in October 2000 and they will receive a regular income every year until harvest.

Animal husbandry is generally easier in the hilly areas, partly because the flash floods in the hills cause less pollution and spread of diseases compared to the lowland floods, where everything is under water for a longer time period. In 2001 there was however an epidemic amongst chickens and many households lost their chickens.

Many people in the hill areas keep buffalo grazing in the hills, which serve as a savings buffer for major events, such as building a house or when the children get married.

Mr Toan used to have seven buffalo, which were sold in order to build his house. Mr Be has five buffalo grazing in the hills, but does not want to sell them, even though this year has been difficult. He would rather borrow from relatives for the urgent needs and save the buffalo for weddings, as he has six daughters. Free-grazing buffalo are no longer allowed because of the forest plantations. People have to herd the buffalo, which is labour consuming and mainly done by children on the half day they are not in school.

Mr Nguyen Duoc's family. Xuan Loc village, Hai Chanh commune

I am 49 years old. Me and my wife have five children. My wife has been sick (a problem in the spine) for seven years and cannot work. An operation would cost 7 million, which we do not have. My oldest daughter is 24 years old. She normally works in the textile industry in Ho Chi Minh City, but she returned for a year after the floods to help the family.

On the evening of the 2nd November 1999, the water started rising in the house. The water rose quickly up to 1.5 metres. People from the co-operative came by boat to help the family to move to the co-operative building, which is higher up. I stayed in the house, sitting under the roof for nearly 3 days. I got diarrhoea from drinking the floodwater. The family got rice, noodles, medicine and clothes from the Red Cross, the co-operative and the People's Committee.



Mr Duoc, Xuan Loc village, Hai Chanh commune

We lost 400 kg of rice and 150 kg of dry cassava and sweet potato, which became wet. It was all that we had in storage in the house. We lost two pigs and 32 chicken. One pig didn't die in the flood, but from disease after the floods. We lost all 22 pepper plants in the garden. Ten of them were bearing fruit already. I would like to plant pepper again, but then we should move to a higher area, which is more safe for the floods. We lost 11 citrus trees, which before the floods gave an income of 2 million VND per year. It was our main income. The house was damaged, part of the roof collapsed. The neighbours helped me to repair basically, but I'm worried that it will collapse again in the next storm.

We gave the wet rice to the neighbours, who used it for fodder, because the neighbours had bought ducks and pigs again. In return we got some edible rice. I borrowed 200,000 VND from the district to buy piglets, but I had to use the money for medicine instead. I got 700,000 VND flood recovery credit. I used it for planting rice and cassava. I do not have any source of income to pay back. I will have to borrow privately in order to pay.

I owe the co-operative 800,000 dong for rice inputs, which I also do not know how to pay.

I collect firewood around ten days per month, for which I get 10,000 dong per day to buy food. I work as labour around ten days per month, some in the brick industry, but mainly for other farmers in the commune.

My situation is not improving, it is getting worse gradually. Four children in school costs a lot and we have lost our main sources of income. We have garden land higher up, where we could invest, but we cannot do that until we can build a house to live there to protect the garden. And we need a well for irrigation. If we could get a bank loan, our first priority would be to buy a buffalo.

Box 5. Proposals from Xuan Loc village

- To improve access to long-term credit for buffalo and cattle, as they provide an important type of 'insurance' in difficult times.
- To increase support to households to form groups for garden development in the hill land.
- To invest in the road and irrigation possibilities in the hill land.
- To provide more vocational training for development of off-farm income.
- To develop non-timber forest products in the forest, such as rattan and mushrooms.
- To strengthen the dam which holds rainwater. To construct more small dams in the hills to hold water and which also can be used for fish raising.

3.3 Institutional factors influencing household recovery

3.3.1 Production strategies

Immediately after the floods the Government made strong efforts at all levels to quickly rehabilitate production conditions and to provide possibilities for people to rehabilitate their economy. The primary strategy was to rehabilitate rice production. The water management infrastructure needed to be repaired in order to reduce the risks of inundation on the lower fields and ensure irrigation on the higher fields. The district and province supported the repairs with funds for material and the villagers contributed labour. The most urgent infrastructure repairs have been done, but there are still major repairs and upgrading needed for long term production security.

As soon as the flood water had gone down, the co-operatives and production groups held meetings to clarify the losses and requirements for the coming production season, both for crops and animal husbandry. Seed supplies for the winter season were the most urgent need. The leaders of the People's Committee and the Agriculture Section had to make several journeys to other provinces in order to secure the rice seed supply, especially since large areas had to be replanted several times. The Agriculture Section distributed seed and planting material for sweet potato, vegetables and other short-term crops.

For the future, the ambition is to build up capacity within the co-operatives to organise the supply of seed themselves, as it is not really the task of the authorities in the District People's Committee to do this. The planning is under way for a secondary co-operative, which would organise the joint needs of the primary co-operatives in Hai Lang district.

3.3.2 Credit

Credit was provided to enable people to reinvest in production. The State Bank for Agriculture and Rural Development allocated 20 billion VND (approx. 1.3 million USD) of credit to Hai Lang district, which was distributed as one-year credit with 0.3% interest for the short-term recovery of production. The decision to emphasise the short-term needs was partly an administrative convenience matter. The process of handling individual credit applications from 15,000 households at once would have been difficult. At commune level, the procedures were further simplified by the decision to distribute the credit to each family, based on area of paddy land. This meant that almost everybody did access credit, including poor households who normally would have difficulties in obtaining bank credit. It however excluded people without paddy land, such as the fishermen in Van Tri village, and a few poor households who do not have paddy.

There was an expectation of additional funds for medium-term credit, which did not materialise. Such credit would have been important to the hill land communes, as they are dependent on long-term production investments for pepper, fruit trees, cattle and fish raising. Also people in the lowland communes need support to diversify production and income generation.

The credit strategy did succeed in rehabilitating production for the vast majority in the district. It is however important to remember that the credit funds mainly replaced lost resources. It was not a new source of income generation. With the low level of income generation in the years after the floods, many households find it almost as difficult to repay the credit now as they did after the losses in the floods. The Bank decided to prolong the credit period for one more year, but it is being collected in January 2002.

The credit and debt situation plays a very important role in the recovery situation of poor households. The combination of old debts which are difficult to pay back after the floods and new debts, both formal and informal, puts some households in a situation of negative debt spiral which is difficult to get out of. After the floods, the State cancelled bank debts if the investment loss in the floods exceeded 80% of the loan value. This rule has not in practice applied to that many households. The State has been more liberal in granting the prolongation of the loan period, rather than cancelling the debts.



Fishing in the normal autumnal floods

According to the Bank for the Poor in Hai Lang district, 37% of the people who received loans before the floods are not able to pay them back. They cannot take on new loans before they have finished paying back the old ones, which leaves them in a situation with very limited means of income generation.

3.3.3 *The role of the co-operatives in recovery of rice production*

Many co-operatives have input supply services, which means that the co-operative signs a credit contract with a supply company for fertiliser, which is delivered through the co-operative to the farmers, who pay after harvest. Production inputs for the winter-spring crop were needed in December-January after the floods. The State credit was not available until March 2000. The co-operatives were able to bridge that gap by buying inputs on credit contracts for delivery to the farmers.

Much of the rice which was lost in the floods was supposed to be used to pay back the input credit to the co-operative for the summer-autumn crop 1999. When the State credit arrived in March it was in many cases used to pay back that previous debt to the co-operatives. The flood recovery credit was thus necessary for the whole input supply system to function. Without it people would not have been able to repay the debt to the co-operatives and the co-operatives would have become bankrupt. Vice versa, without the co-operative input credit, the State credit would have come too late to be useful for the winter crop after the floods.

3.3.4 *Private loans*

Private loans are a common way for poor people to bridge the food gap during the months before the harvest of the winter-spring crop. These loans are paid back directly after harvest and are normally not a big problem if they do not accumulate. The problem with private loans was decreasing before the 1999 floods, because of increased availability of other sources of credit. The situation has now become more difficult, as people have taken out more private loans than usual. Income during the years after the floods has been low and people have had difficulties repaying the loans.

The local money-lenders are often local traders or more well-off households in the community or neighbouring communes. The private loans in Van Tri village are mainly taken out locally in the village and it is easier for the village to monitor the situation and make sure that it does not get out of hand. There is a degree of social pressure on these households not to claim too high interest rates. But there is little open discussion about the problem at commune level. The households who take out loans do not normally talk about it. The loans in Phuoc Dien village are mostly from traders at Dien Sanh market, and are more difficult to control, as they are outside community social pressure.

Poor households, who have been caught in a debt spiral for many years, would need special attention to help them out of their difficulties. The Government is generally reluctant to cancel debts. Normally the VBARD Bank does not give new loans if the old loans are not yet repaid. The Bank also does not allow loans to be used to repay private debt. A special programme would thus be required for this most difficult target group, with a combination of credit to service old debts and provide for income generation. They would need special extension support to make sure that the income generation efforts pay off. They would also need support with overall household economic planning over a long time period. This could possibly be a role for the mass organisations at commune level, with support from household economic expertise from the district planning section and finance section.

3.4 The role of local government and local organisations

There was quick and comprehensive action from the Government at all levels, as well as from the local organisations in response to the crisis. Immediate action was taken for rescue operations and distribution of food by the People's Committee, the village leaders, co-operatives, the Red Cross. The Fatherland Front, Farmer's Association, the Women's Union, the Youth Union, the War Veterans Association, the Red Cross, and the Buddhist communities, all took part in the organisation of activities for repairing houses and infrastructure, cleaning up the environment, burying dead animals and replacing losses.

At all levels there are Boards for Flood and Storm Protection, under the People's Committee, who are responsible for the planning and co-ordination of disaster mitigation efforts. Under the District People's Committee, a 'Board for the Management and Distribution of Support for Flood Relief' was established, with representatives of the key district sections and organisations.

As action was urgent, more power was delegated to the District People's Committee than normal. The DPC took the main initiative in organising both the immediate emergency response and the longer-term efforts for recovery. The province level organisations mainly monitored that the district was doing a good job. The budget had to be thoroughly revised and the DPC was active in designing a strategy and organising resources for recovery.



A normal autumn flood on the way to Hai Thanh commune

The role of the village leaders is greater during crisis than under 'normal' conditions. The village leader has the overview of all the activities taken by the various organisations and support directed to the village. Community decision making is strengthened regarding the distribution of support from outside. Village meetings are frequent in order to decide on the distribution of Red Cross housing support, who is in extra need of food support and so on. The village-based co-operative organisations play an important role in increasing the self-reliance of the village. They are building capacity for producing the seed that the village needs, organising the storage of emergency supplies and organising credit funds.

The social role of the local government and organisations is perceived as very important. During the interviews people would always specify which leaders of organisations had visited them to enquire about their situation. The district leaders were in boats during the whole flood

crisis, organising rescue operations and food distribution. The mass organisations, village and commune leaders spent a lot of time on social visits, supporting people, finding out about what damage people had suffered and how people were coping. The cases where commune or village staff failed in these social commitments were seen as a serious problem, impacting on their credibility to continue in their positions.

3.5 Proposals and policy recommendations, Hai Lang district

The following proposals were put forward during the village, commune and district meetings and household interviews. The proposals originate at village and commune level and were discussed and elaborated at district level. There were no major contradictions in the views at the different levels. Below, we comment on how the local proposals relate to the government strategies.

Reducing the impact of the floods

- To strengthen the physical infrastructure (dikes, dams, canals, roads) to reduce the eroding impact of the water.
- To support people in strengthening their houses. Long-term low interest credit arrangements need to be available for housing.
- To construct community buildings such as schools in two storeys, to provide rescue opportunities.
- To store rice and other products in high, secure places.
- To improve the spread of information and forecasting before the floods.

Improving emergency operations during the floods

- To improve emergency planning in the communes.
- To increase the number of boats to be used both for rescue operations, transporting people to higher places and for delivering food and emergency supplies. To purchase life-vests.
- To improve communication networks for the rescue operations.
- To arrange means to rescue the domestic animals and move them to higher places.
- To store an emergency kit of basic necessities at home before the flood season, containing items like food, drinking water and fuel.
- To store medicine and disinfectants for the water in the commune health clinic for rapid distribution during the floods.
- To improve facilities for the drying of rice that is soaked.

Recovery after the floods

- To secure production, mainly through the strengthening of the water management infrastructure to protect against heavy rains and drought during the crop season.
- To prolong credit for recovery to three years, in order for the households to have time to regenerate resources.
- To make credit for recovery available for recovery of all kinds of productive resources and not only based on area of paddy.
- To support the establishment of community savings and credit funds, to reduce the need for people to take high-interest private loans. To strengthen debt counselling for poor households.

- To support the villages and co-operatives in developing their capacity for seed production, as well as their networks of contacts with suppliers.
- To strengthen co-operative capacity for managing the input supply system, based on credit contracts with the suppliers.
- To strengthen the veterinary capacity at all levels, to reduce the risk of disease and epidemics after the floods. To avoid investments in animal husbandry until the sanitation situation is under control.
- To improve access to medium-term credit and extension services for reinvestment in pepper, fruit trees, animal husbandry and other long-term production strategies.
- To invest in clean water systems with filters.
- To organise community works with paid wage labour from the commune to create income opportunities.

Reducing vulnerability

- To encourage diversification of production, in order to reduce the dependency on rice.
- To strengthen the capacity of the extension and credit services to support the farmers in new production and income generation decisions.
- To support the development of local processing and preservation of agriculture products.
- To strengthen water management infrastructure.
- To plant short-term rice varieties and to expand the use of new planting techniques (e.g. ‘throwing rice seedlings’) and other efforts to ensure an early harvest of rice, before the flood season starts.
- To encourage and support various forms of savings.
- To develop non-timber forest products. They are a good source of ‘emergency income’.
- To strengthen the health insurance system to avoid high medical costs undermining the household economy.

The Government Interim Poverty Reduction Strategy Paper (IPRSP) includes many of the proposals that have been discussed in Hai Lang district. In comparing the set of issues, we would like to draw attention to a few of them, which might need further consideration in the IPRSP.

Strengthened infrastructure for water management is obviously a key element in reducing risk. Increased district control over planning and management of investments would increase the necessary local insights required and avoid situations such as the Hai Thanh dike being lower than the neighbouring commune dikes.

The potential for using infrastructure investments as a way of creating labour opportunities after the floods has not yet been made use of in emergency support. Payment for community labour could be considered partly as an alternative to disaster relief and a way of supporting recovery.

The IPRSP gives attention to the fact that the credit system needs to be made more accessible and relevant to the poor. One factor that needs addressing is that a major reason why people cannot access credit is because they have old unpaid debts. In connection with the floods the lack of capacity to pay back old debts has become a serious obstacle to many households. Many poor households have reached a situation which they cannot solve on their own. There is need for debt

counselling and carefully guided credit to rehabilitate the household economy of the households in greatest difficulties. Tim Conway (2001) highlights as one of his main points to reduce vulnerability, the formulation of credit and insurance policies and conditions, which allow people to dare to take risks, in order to develop.

The role of the co-operatives is very important in organising the access to production inputs, through credit arrangements with the supply companies. There is much potential in strengthening their management capacity and supporting them to develop further services, especially veterinary services, savings and credit services and seed production.

The resources which people draw on in order to cope with the crisis need further attention. They include the small daily income from minor forest products such as leaves, rattan, bamboo, firewood and medical herbs. They also include the buffalo that even fairly poor people may have grazing in the hills and which function as a type of insurance in times of crises. Such sources of income could be developed more systematically.

Health is a factor which has a large impact on poverty, vulnerability and capacity to recover from crises, even though it is not directly discussed in the disaster mitigation context. We found that bad health and high medical costs were a large component explaining difficulties to recover after the floods. This concerned both households classified as poor and non-poor. Even though poor households receive a reduction in medical fees, the costs were still much higher than they could cope with and they often took on private loans to handle the costs. A reform of the Government health system is under way, to introduce an insurance-based system to replace the fees. Pilot activities are being conducted in order to find methods of community insurance systems, as the poor may have problems with individual insurance fees.

4 Conclusions

The basic assumption is that the capacity of households to recover after the floods depends on their livelihood situation, the production system and institutional context that they are part of. Our findings suggest that people's capacity to recover seems to be related more to their general household economic and livelihood situation, than to the size of the losses in the disaster itself. A general conclusion is that people who had a stable economy and a stable livelihood situation before the floods have more or less recovered from the losses. People with an unstable economic and livelihood situation are now in increased difficulties. An unstable situation is for example characterised by accumulating debts. The majority of the households in such difficulties are poor, but there are also better-off households who have got into trouble because of failed investments, bad health and high medical costs. In combination with the flood losses, they are now in a situation of increasing difficulties.

When discussing factors that affect people's capacity to recover after the floods, the Vietnamese concept of 'chu dong' is central. 'Chu dong', means to be able to control things oneself, not to depend on outside forces. The opposite is to be 'bi dong', which means dependent on factors outside ones own control. The households who have the resources to clear the land in time, control the access to water and have access to inputs, are 'in control' and can recover quickly. Constraints to 'chu dong' are both individual and institutional.

Of the four case study villages, the hill land village has had the highest capacity to recover. This is partly due to a more diversified economy, with more access to sources of income from forest planting, collecting firewood and animals grazing in the hills. They are close to the market, with opportunities for income from small trading. There are also more labour opportunities, all year round, in a more diversified production context. The hill land people are thus more flexible and have more control over their sources of income than both the lowland and the mountain population. The lowland is largely a mono-culture economy, which is dependent on two major points of income each year, from the rice harvests. If the harvest fails, or if funds are required at other points in time, there are few options other than taking out loans. Labour opportunities are mainly available during rice planting and harvest. The people in the mountain commune have certain possibilities of solving emergency needs by collecting minor forest products. The remoteness of the commune means fewer labour opportunities, less access to inputs and markets. The main constraint to recovery is perceived as being people's limited access to land and forest, as most of the area is under the control of agencies outside the commune.

The production environment during the years after the disaster also has a large impact on the capacity of people to recover. The immediate coping after the disaster has been solved by various emergency efforts. The risk of severe damage to household livelihood conditions comes from the series of production problems, which constrain the households in their recovery process. On the lowland these constraints have been heavy rains during crop season reducing the harvest, low rice prices, and animal husbandry diseases. The conclusion would thus be to concentrate development efforts on improved drainage capacity, diversification, marketing efforts and improved veterinary services. Improvement of the water management infrastructure is an important way for the community to increase 'chu dong'. To be able to control the drainage and irrigation of the fields, and thereby be less dependent on the weather, is a high priority for people both in the lowland, hill land and the mountains. In the mountains it is also a way to increase access to land. Larger district and commune control over of the planning and implementation of water management investments tends to increase the degree of sensitivity to balancing the interests of different groups of people.

As we understand the policies for recovery, they have focused more on the absolute value of damage by the floods and less on relative damage. A consequence of this has been less attention

to recovery of household food security in the mountain areas even though the relative impact of the floods for people's livelihood seems to have been as serious in the mountains as on the lowland. Institutional arrangements which guarantee that the mountain population have enough land to ensure food production have a high priority. Also on the lowland there are certain villages and people who have more difficulties in recovering because their overall production and livelihood situation is more difficult. If we look at capacity to recover rather than at the value of the loss, we would argue for more attention to the poor and vulnerable in the support for recovery. This would involve greater attention to non-production aspects of recovery including the support for secure housing, sustenance and health.

Our findings suggest that improved capacity for commune and village management of resources would increase capacity to cope with crises. Community-managed savings and credit schemes would improve the access to credit and be more flexible than the bank in adapting to the conditions of each household. Community management of production and supply of seed and inputs is vital for quick recovery in crisis situations, but also for the normal access of inputs, especially for the poor.

Commune management of the hill land around the settlement area in the mountain commune could have the advantage of increasing the flexibility in land use according to changing circumstances. In emergency cases, as in the coping period directly after the floods, there could be a larger tolerance regarding use of hill land for food production. Loss of land for some households could be temporarily compensated with other land. From the long-term planning perspective, the commune would have more possibilities and incentives to develop forestry and agro-forestry production including cash crops, food crops, fruit trees, high value forest species, medical herbs and rattan, which would increase the sources of income and reduce vulnerability to crises.

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Appendix

A Luoi District

District discussions:

Mr On – Party Secretary
Mr Le Van Tru – Chairman of A Luoi District People’s Committee
Mr Tran Dinh Vu – Vice-Chairman of the District People’s Committee
Mr Nghia – Head of Administration DPC
Mr Nguyen Duc Phong – People’s Committee Administration
Mr Vo Nguyen Dai – Head of Agriculture and Rural Development Section
Mr Trinh Van Son – Vice-head of District Agriculture Section
Mr Nguyen Van Tu – Head of District Land Management Section
Mr Nguyen Tan – Land Management Section
Mr Vo Van Chau – Vice-head of District Forest Station
Mr A Mong Bui, Head of Farmers Association
Mr Van Lap – Agriculture Section
Mr Toan – Agriculture Section
Mr Ngum – Agriculture Section

Hong Ha commune

Mr Le Van Hua – Chairman of the Commune People’s Committee
Mr Nguyen Hoai Nam – Chairman of the Commune People’s Council and Party Secretary
Mr Ho Xuan Kim – Vice-Chairman of the commune People’s Committee
Mr Tran Minh Xuong – People’s Committee
Mr Dang Van Quyet – Party officer
Mr Le Minh Cui – Vice-Chairman of the People’s Council
Mr Thao – People’s Committee cadastral officer
Mr Khuon – Chairman of the Fatherland Front
Mrs Ho Thi Lan – Chairwoman of the Women’s Union
Mrs Kan Diep – Vice-Chairwoman of the Farmers Association
Mrs Hoai Thi Ai – Chairwoman of the Farmers Association
Mr Don – Party branch
Mrs Ho Thi Hoa – Family Planning officer
Mr Ho Van Hoi – Secretary of the People’s Committee
Mr Ra Pak Phon – Head of the clinic
Mr Ho Ngoc Duong – Head of Pa Rinh village
Mr Ho Van Thay – Head of Con Tom village
Mr Quynh Phan – Head of Pa Hy village

Pa Rinh village

Mr Ho Ngoc Duong – Head of the village

Households interviewed:

Mr Quynh Eo
Mrs Kan Mua
Mrs Kan Bac
Mr Quynh Dien
Mrs Kan Diep
Mr Tran Minh Xuong
Mrs Huynh Hoa

Con Tom village

Mr Ho Van Thay (Vuong) – Head of the village

Households interviewed:

Mr Quynh Luu

Mrs Kan Bang

Mr Quynh Xoan

Mrs Ho Thi Hoa

Impact of the floods

District level figures:

- 9 people dead
- 37 billion dong of material damage

The impact of the floods in Hong Ha Commune

- 2 out of 16 ha of paddy land has been covered in more than a metre of stone and not possible to recover. All 16 ha were affected by sand and stone inundation.
- 20 ha of cassava was inundated.
- 30 ha of dry land crops were damaged.
- 15 out of 32 ha of sugarcane was damaged.
- Two dams/reservoirs for irrigation have been damaged.
- 2 brick houses and 5 wood houses close to the river have been swept away.
- The forestland was eroded, leaving holes or soars in the forest coverage. 17 ha of planted forest was swept away. 10 ha of bamboo was lost.
- 3,000 m² out of 7000 m² of fishponds were damaged. 30,000 fish escaped.
- 19 cattle, 11 pigs, 285 poultry and 13 goats died.
- 1,156 kg of rice and 420 kg of seed was swept away.
- Furniture, clothes, household equipment, radios, school books etc. were swept away.
- 9 m³ of building wood was swept away.
- A major bridge collapsed. The road was unpassable for 6 weeks. Telephone lines were unworkable.
- All 5 classrooms were damaged.
- The clean water system was damaged.
- The estimated total value of losses: 1.3 billion dong.

Hai Lang district

District Fieldwork team:

Mr Ta Sau – Vice-head of the District Agriculture Section. Head of the fieldwork team.

Mr Cap Kim Thanh – Vice-head of District Agriculture Section

Mrs Le Thi Huong – staff of the agriculture section

Mr Truong Quang Hue – staff of the agriculture section

Mr Dao Tram – staff of the agriculture section

Ms Vo Thi Thuy Linh – staff of the agriculture section

Mrs Le Thi Tra – staff of the District Women's Union

Mr Vo Huu Lam – staff of the District Farmers Association

Mrs Le Thi Loan – staff of the District Extension Station

District discussions:

Mr Tran Duc Tam – Chairman of Hai Lang District People’s Committee
 Mr Van Xuan Tho – Vice-Chairman of Hai Lang People’s Committee
 Mr Vo Van Quang – Head of the District Agriculture Section
 Mr Le Viet Thanh – Vice-head of Administration, Hai Lang People’s Committee
 Mr Tranh – Head of the District Finance Section
 Mr Le Quang Sy – Vice-head of Finance Section, Hai Lang PC
 Mr Le Nhan Manh – Vice-head of Planning Section, Hai Lang PC
 Mr Khuyen – District Fatherland Front
 Mr The – War Veterans Association
 Mr Cuong – district Red Cross
 Mr Tiet – Head of the District Health Centre
 Mr Doi – Head of the District Education section
 Mr Ngoc – Vice-head of the District Farmers Association
 Mr Mai – Head of the district branch of Vietnam Bank for Agriculture and Rural Development
 Mr Ho Linh – District Section for Labour and Organisation (resp. for poverty alleviation)

Hai Tan commune*Fieldwork team:*

Mr Bui Van Anh – staff of the commune People’s Committee
 Mr Nguyen Khanh May – Head of the commune Farmers Association
 Mrs Bui Thi Miet – Head of the commune Women’s Union
 Mr Nguyen Duc Dao – Head of Van Thanh co-operative, Van Tri village
 Mr Pham Tai Kiem – member of Van Thanh co-operative

Commune discussions:

Mr Ninh – Party Secretary Hai Tan commune
 Mr Bao – Chairman of Hai Tan commune People’s Committee
 Mr Sau – Head of Administration, commune People’s Committee
 Mr Long – Army division, Hai Tan commune
 Mr Giang – Red Cross and Youth Association
 Mr Luc – Head of the commune Fatherland Front
 Mr Hong – War Veterans Association
 Mr Thu – Commune health clinic

Household interviews, Van Tri village:

Mr Tran Vang
 Mr Le Van Vach
 Mrs Pham Thi Liet
 Mr Pham Van Chay
 Mr Pham Vu Long
 Mr Pham Tuan Thin
 Mr Nguyen Duc Nong
 Mr Nguyen Cap
 Mr Nguyen Duc Bau
 Mr Nguyen Huu Thanh
 Mr Pham Van Quynh
 Mrs Nguyen Thi Hiep
 Mr Nguyen Duc Vy
 Mr Nguyen Duc Xanh
 Mr Pham Tai Huong
 Mr Le Van Dang

Hai Chanh commune

Fieldwork team:

Mr Nguyen Van Bay – Staff of the commune People’s Committee
Mr Nguyen Van Kim – Vice-head of the commune Farmers Association
Mrs Nguyen Thi Mai – Head of the commune Women’s Union
Mr Nguyen Van The – Head of Xuan Loc co-operative

Commune discussions:

Mr Nguyen Thanh Toan – Chairman of the Hai Chanh commune People’s Committee
Mr Le Thu – Chairman of the commune People’s Council
Mr Nguyen Van Chuong – Vice-Chairman of commune People’s Committee (Chairman since 2001)
Mr Ho Dinh Thai – Head of administration CPC
Mr Phan Tai Kiem – Head of commune army section
Mr Vu Viet Kien – Head of commune Veterans Association
Mr Nguyen An Lac – Vice-head of the commune Fatherland Front
Mr Dung – commune PC member responsible for poverty alleviation
Mr Duong Quang Mau – Chairman of the commune Farmers’ Association
Mrs Nguyen Thi Oanh – Cashier of the People’s Committee
Mr Hoang Xuan Thuong – People’s Committee
Mr Nguyen Van That – People’s Committee
Mr Le Xuan Luong – Youth Union
Mrs Nguyen Thi Huong – Commune health clinic

Household interviews, Xuan Loc village:

Mr Nguyen Van Thuc
Mr Nguyen De
Mr Nguyen Van Khang
Mr Ho Dinh Duy
Mr Nguyen Van Doai
Mrs Nguyen Thi Hy
Mr Quyen
Mr Phan Be
Mr Phan Sinh
Mr Nguyen Van Vong
Mr Nguyen Van Le
Mr Nguyen Van Toan
Mrs Nguyen Thi Nghe
Mrs Nguyen Thi Thiep
Mr Nguyen Duoc
Mrs Phan Thi Thu

Hai Thanh commune

Fieldwork team:

Mr Hoang Xuan Hung – staff of Hai Thanh commune People’s Committee
Mr Kha – Head of Phuoc Dien co-operative
Mr Vuong Khanh Tram – Vice-head of Phuoc Dien co-operative
Mr Nguyen Huu Tau – Cashier of Phuoc Dien co-operative

Commune discussions:

Mr Ly Vinh Quyen – Chairman of Hai Thanh commune People’s Committee
Mr Ly Van Xao – Head of the commune Fatherland Front
Mrs Phan Thi Hoe – Head of the commune Women’s Union
Mr Ly Thanh Mai – Head of the commune Farmers’ Association

Household interviews, Phuoc Dien village:

Mr Vuong Khanh Dang
 Mr Hoang Chien
 Mrs Nguyen Thi Thu Thuy
 Mr Vuong Bui
 Mr Ngo Binh
 Mrs Thanh Thi Nghiem
 Mrs Nguyen Thi Lien
 Mrs Vo Thi Hue
 Mrs Ly Thi Lieu
 Mrs Hoang Thi Manh
 Mrs Huynh Thi Nguyen

Damage caused by the floods in Hai Lang district, November 1999. (Hai Lang District People's Committee official data)

People dead: 29
 People wounded: 20
 Value of material losses: 159,332 million VND (approx. USD11 million)
 (1 USD = 15,000 VND)

Table 4. Selected damage figures (the full list is too long to be included here)

Item	Quantity lost	Value in million dong
Erosion on the dikes	203,146 m ³ of soil	2,438
Damaged dams and sluices	257	577
Damaged pump stations	24	194
Damaged canals	98,610 m	
Soil erosion	144,477 m ³	1,734
Damaged bridges and culverts	366	1,893
Damaged road	44,824 m	
Growing crops destroyed	1,089 ha	4,580
Fruit trees damaged	51 ha	141
Industrial crops damaged	30 ha	789
Dead cattle	472	566
Dead pigs	29,914	10,979
Dead poultry	392,790	6,477
Rice seed lost	466 tons	1,631
Rice lost or damaged	25,291 tons	45,170
Class rooms damaged	150	536
Class rooms collapsed	50	472
School material and equipm		1,205
Houses seriously damaged	1,867	9,083
Houses destroyed	267	1,299
Houses flooded	16,207	8,104

The Stockholm Environment Institute (SEI)

SEI is an independent, international research institute specializing in sustainable development and environment issues. It works at local, national, regional and global policy levels. The SEI research programmes aim to clarify the requirements, strategies and policies for a transition to sustainability. These goals are linked to the principles advocated in Agenda 21 and the Conventions such as Climate Change, Ozone Layer Protection and Biological Diversity. SEI along with its predecessor, the Beijer Institute, has been engaged in major environment and development issues for a quarter of a century.

Mission

SEI's mission is to support decision-making and induce change towards sustainable development around the world by providing integrative knowledge that bridges science and policy in the field of environment and development.

The SEI mission developed from the insights gained at the 1972 UN Conference on the Human Environment in Stockholm (after which the Institute derives its name), the work of the (Brundtland) World Commission for Environment and Development and the 1992 UN Conference on Environment and Development. The Institute was established in 1989 following an initiative by the Swedish Government to develop an international environment/development research organisation.



Risk and Vulnerability Programme

The Risk and Vulnerability Programme conducts research on environmental and technological hazards and global environmental change. Expanding on ongoing and previous work on risk analysis, risk perception, and risk management, research now also focuses on the differential vulnerability of people, places, and ecosystems. The hallmark of this programme is integrated analyses that seek to bridge the best of the social and ecological sciences. A major priority is the development of policies and initiatives that hold promise for enhancing human security, adaptive capacities, social equity, and resilient societies.

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