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Sustainable Livelihood Opportunities and Resource Management in Coastline Communes Facing Special Difficulties

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1. INTRODUCTION

1.1 *Program context*

This study was carried out in the context of a new national program under Decision No. 257/2003/QD-TTg (dated December 3, 2003) of the Prime Minister on support for investment in the construction of essential infrastructures of communes in coastal fronts and islands which meet with exceptional difficulties⁷. The main objective of Decision No.257 is to invest in essential infrastructure with a view to creating conditions for development of production. Other stated objectives include tapping the potential of such areas, stabilising the life of local people, contributing to the program on hunger elimination and poverty alleviation and maintaining security and national defence.

According to the subsequent Decision No.683⁸ of MOLISA, selection of these coastline communes with greatest difficulties should be according to the following criteria:

- They are located on coastal spits or in alluvial plains, lagoons, peninsulas or islands with boundaries stretching close to the coast; exposed to harsh conditions such as flooding, drought and poor soil;
- They are not covered by Program 135;
- They are classified as ‘poor’ according to Decision No.587 of MOLISA which means that over 25% of the households are ‘poor’, and that they lack three out of six of essential infrastructures (such as roads, schools, health stations, domestic water, domestic electricity and market places);
- They lack essential infrastructure for production such as sea-dykes, jetties, irrigation works, pumping stations for aquaculture and salt production and roads to fish harbours and markets.

Funding for this program will start in 2005 and will be granted to 157 communes⁹. The majority of these communes are in provinces of the Central Coastal Region.

1.2 *Study aims and objectives*

The overall aim of this study is to understand better the specific factors and conditions that contribute to poverty in coastline communes, and in so doing to contribute to formulation of this new national program. The specific objectives of the study are:

- 1) To provide an in-depth understanding of livelihoods and poverty issues facing poor coast-line communes;

⁷ The term used in official translation of documents is ‘coastal spits’, in this report the term has been replaced by ‘coastline’.

⁸ Decision No.683 /2004/QD-BLDTBXH (dated May 14, 2004) promulgating criteria of communes in coastal spits and islands which meet with exceptional difficulties.

⁹ See Decision No.106/2004/QD-TTg (dated June 11, 2004). This approves the list of communes included in the program.

- 2) To assess the implications of this for poverty alleviation programs such as that under Decision No.257.

The two main outputs are:

- a) A thematic report presenting the main issues and constraints facing poverty alleviation in coastline communes and presenting the implications of various development options;
- b) The documentation of two commune case studies to be presented at the national conference in November, 2004 by the Chairman of the People's Committee of each commune (the materials for this are reproduced in the Annex 2 & 3 of this document).

The research was carried out in conjunction with a commune key informant team made up of People's Committee members and leaders from mass associations and the villages. The methodology involved an analysis of two coastline communes and a mixture of key informant and household level interviews with as wide a variety of household types as possible. It also involved a number of different forms of group discussion and interviews involving interactive Rapid Rural Appraisal methodology. These group discussions and techniques were especially useful in ensuring that the commune team was involved in all of the analysis and preparation of the materials. In so doing the research was able to develop a rapid and simple methodology for livelihoods impact assessment.

The report is structured to present:

- A brief overview of the issues, constraints and assets specific to coastline communes;
- A discussion of the various livelihood strategies and income generation opportunities divided into three sections on:
 - Opportunities for the development of traditional livelihood activities such as agriculture and fisheries;
 - Opportunities from the development of high input livelihood activities such as aquaculture, tourism and industry;
 - The importance of migration as a livelihood activity;
- A conclusion which provides a discussion of the main priorities and recommendations referring back to the specific context and constraints found in poor coastline communes.

Summary of main recommendations

- Coastline communes are characterised by multi-occupational and multi-locational livelihoods which result in unique features of poverty. These include seasonal underemployment, high levels of gender-differentiated mobility and opportunities for growth which can have serious environmental and equality implications.
- Poverty interventions should consider the trade-offs between growth, increased risk and environmental impact by aiming at increased productivity but at the same time reducing variance around rising productivity thus reducing risk.
- There are specific environmental considerations and technical challenges facing infrastructure development in coastal areas. These involve increased salinity, higher levels of siltation and a low lying water table which results in vulnerability to flooding.
- Opportunities for significant productivity increases from agriculture and fisheries are limited, but their role in providing stability of income to the poorest must be recognised.
- The way in which many of the opportunities for growth, such as aquaculture and tourism, have the potential to result in significant inequality (and environmental damage) emphasises the need for the careful targeting of funds for poverty alleviation *within* the commune. Unless the benefits from productive activities can be made more accessible to the poorest groups it may be hard to justify spending such funds on productive infrastructure.
- Remittances are a vital part of most households' economies suggesting that that seasonal migration remains one of the most positive options for the poor. This requires policies which move away from the 'place-targeted' approach of infrastructure development, to tackle the constraints that migrants face in reducing risk and increasing remittance transfers.
- One of the biggest challenges is the way in which interventions to help the poorest such as the provision of certain infrastructure or credit schemes are taken up by those who are more able. There is a need to assist the poorest groups to benefit from productive opportunities and migration through targeted credit schemes and training in vocational skills.

2. SPECIFIC FEATURES OF COASTLINE COMMUNES

2.1 *Diversity and dynamism*

Drawing on the fieldwork results from two coastline communes in Thanh Hoa and Nghe An Provinces, the first section of this paper lays out the common factors, problems and constraints which characterise livelihoods in poor coastline communes. Both case-study communes are characterised by a vulnerable and fragile natural environment prone to storms and flooding. Livelihoods are traditionally dominated by agriculture and fisheries, however coastline fisheries

have no potential for growth and the weather conditions and soil type combine to result in alternate flooding and drought situation which limit the effective use of agricultural land. The limited, and poor water supply, which is often affected by salt water intrusion, can affect health conditions.

Compared to other coastal communes, these coastline communes have little development potential for harbour development and riverine aquaculture. In most cases poor coastline communes have poor infrastructure and that which has been constructed, suffers from particular structural problems such as erosion due to wind and salinity and the impact of flooding and desiccation. For example, the sea dyke which was built in Dien Trung Commune in 1987 has been breached each year since 1996 flooding a large area of agriculture land and housing in the commune.

Coastal areas are marked by a diversity, variability and complexity of livelihoods. In addition there are overlapping institutions related to agriculture, fisheries and industrial activities which often have conflicting policies and priorities. This diversity of environments, economic activities and stakeholders with conflicting interests, combined with specific market contexts results in specific features of poverty. As in any context the 'poor' are not a uniform group but rather there are many different poor groups with different needs and capacities, which are affected by different kinds of risks.

Coastal areas are characterised by stark seasonal variations and fluctuations. These variations affect fisheries production in terms of the availability of different species, and marked seasonal changes in weather have an important influence on livelihoods by providing peaks of employment, income and expenditure. Such variations result in seasonal under-employment and high levels of migration. This is both skilled and unskilled labour migration, mainly male, and is an issue which has important implications for poverty programs.

In terms of human resources, educational levels are for the most part low. The prioritisation of education amongst households varies starkly between the two communes. As in other areas, economic factors force many children to leave after lower secondary school and few labourers are professionally trained. The poor have little access to vocational training and aspirations for the future amongst young people are, for the most part, limited to plans to work as migrant labour as fishers or in industrial zones in the south.

Both communes are well connected, being located on, or near to main roads. Households have strong links within and beyond the region. Both of these links suggest a potential to respond to rapid transformations occurring elsewhere.

For many households, the main sources of capital are from remittances or loans from friends and relatives. Access to formal sources of credit are limited. Traders are an important source of credit but this ties the seller to the buyer and removes their flexibility to be able to look around for better markets. Many of the loans are used to deal with capital shortage for family expenses when family members have not sent remittances on time, or to supplement low wages and the seasonality of earnings. High levels of community support are evident with many of the poorest relying heavily on social networks both for interest loans and for gifts and support during hard times.

2.2 Longer term trends

The coastal regions of Vietnam are amongst the highest rural population densities in the world, and many coastal districts are now undergoing rapid population change and in some cases urbanisation. Environmental degradation and reduction of fish stocks is resulting in lower dependence on fisheries. This is exacerbated by poor agricultural productivities due to poor quality of land and further increasing population densities.

Historical factors behind poverty distribution vary considerably in coastal areas from other areas of the country. These are rooted in the diversity and mobility of livelihoods, the tradition of fisheries and the associated lower reliance on agriculture. In both of the case-study communes there have been sharp historical disjunctures which are shown clearly in commune timelines reproduced in Annex 2 & 3.

The varying patterns of land distribution which have occurred are significant. For example, all those who were members of the fishing cooperative in Quang Thai Commune at the time of land allocation were not given land and today many 'fishing' households remain without land. In addition land was allocated on the basis of number of labourers in the household at that time, and there has been no redistribution of land since. This is now a disadvantage for some households which have an age structure that means current numbers of labourers are high. In Dien Trung Commune however, fishery and agricultural activities were combined under one cooperative and this has thus resulted in more even land distribution post allocation. In addition, land in Dien Trung Commune was allocated on the basis of household and not the number of labourers as in Quang Thai Commune. However, in 2002, land plots were concentrated. Some poorer households claim that they received poorer than average quality land and this may be a factor further perpetuating their poverty.

Changing labour markets and migration patterns are resulting both in new opportunities and the loss of traditional opportunities, requiring a diversification of skills. Migration patterns are reacting less and less to seasonal variations in natural resources and more to other factors associated with industrial investment and their terms and conditions.

The rapid changes that characterise many coastal areas create opportunities for different groups of people, depending on their ability to respond. However, the coastal poor have limited access to new technologies, skills, markets, capital and networks. There is some evidence from some of the interviews of the polarisation of the poor into those who can benefit from opportunities and those who cannot, having suffered from flooding, loss of agricultural crops or health problems.

2.3 Shocks and rapid changes

At the community level most coastline communes are prone to natural disasters such as flooding and typhoons. In these events it is often the poorest who suffer the most. However, those who have invested heavily in private infrastructure, such as that associated with aquaculture, may incur disproportionate losses.

Price changes and the collapse of the market has resulted in rapid changes. The closure of their handicraft cooperative in the late 1980s in Quang Thai Commune, due to the collapse of the eastern European market, was the trigger for increased labour migration. This event is perceived to have coincided with a sharp decline in fish stocks and is seen as a crisis point in the recent history of the commune.

Shocks which occur at the household level, such as sudden health costs as a result of the sickness of children or accidents (which place a double burden if they affect the main labourer) can force people into debt. School fees are a heavy financial burden noted by many and the need to send children to extra classes is forcing many poor families to have to borrow at the start of the school year. Taxes and commune contributions (including those to infrastructure development) are placing a burden on some of the poorest households (see Box 2.1). Relocation and resettlement, which occurred in 1977 (towards the sea for the building of the road and agricultural expansion) and later in 1987 (away from flood prone areas), was identified as one of the main reasons for sudden shifts into poverty in Dien Trung Commune.

Box 1. The burden of community contribution
Interview with Mr Thanh¹⁰, poor farmer, Dien Trung Commune

Mr Thanh is a veteran who was affected by Agent Orange during the war. His 17 year old son has migrated to find work as an agricultural labourer and his three youngest children are at school. *'I do not have money to pay for their education. They are often supported by their teacher and some fees are waived by the school but I think we cannot rely on that charity for much longer so I intend to let them leave school to find work'*. His house was damaged by storms and as a result he was nominated to receive support for its rebuilding. The district contributed 3 million VND, the commune Farmer's Association 2 million VND and he had to contribute 2 million VND which he has raised through loans. However, despite this assistance his agriculture land was seized by the commune as he was unable to pay his contribution for the construction of the Anh Ngai canal. *'I am not opposed to the mobilisation of capital for construction but there should be consideration for specific households.'*

3. LIVELIHOOD OPPORTUNITIES AND IMPLICATIONS FOR COASTLINE COMMUNES

The coastal zone offers many opportunities for multiple livelihoods strategies that vary considerably throughout the year. Currently these are predominantly associated with agriculture or natural resources. Few of these are large-scale enough to employ many labourers beyond the household itself, so apart from creating jobs for surplus labour in the extended family, they do not address problems of a labour surplus in the communes.

When considering the impact of current and new livelihoods opportunities on poverty alleviation and sustainability the indicators which were employed were:

- accessibility to the poorest groups
- associated risks and vulnerabilities
- scope for income generation, and
- environmental (and health) impact.

These indicators are themselves often contradictory, for example livelihood options such as aquaculture which may result in increased income can be highly risky.

In the choice of the indicators it was recognised that strategies which attempt to increase production may risk not achieving poverty alleviation and that there are trade-offs between growth and risk reduction. Many forms of growth are resource intensive and associated with an

¹⁰ All names in this report have been changed

increase in environmental impact. Table 1 gives a summary of a discussion held in Dien Trung Commune on the various poverty and growth related aspects of different livelihood options.

The following discussion examines the main livelihood activities in relation to the four indicators above. It also covers recommendations as to how specific interventions can assist in achieving accessibility to the poorest, decreasing risk, improving income generation and limiting environmental impact for the various options available in coastal areas.

Table 1. Poverty and growth related aspects of various livelihood activities: summary of group discussion with People's Committee members and village leaders in Dien Trung Commune

Livelihoods	Accessibility to the poorest	Income generation	Risks	Impact on the environment
Migrating	Many poor people involved (1 ¹¹)	Predominant income (1)	Diseases, accidents	
Growing peanut	Many poor people cultivate (2)	Major agricultural income (4)	Dependence on weather conditions	Few problems, good for soil fertility
Growing sweet potatoes	100% of poor households cultivate this (3)	Low income, used for raising pigs	Little risk	No impact
Growing rice	100% of poor people cultivate (4)	Low income	Dependent on weather conditions	Pesticides sprayed, uses chemical fertilizer, and needs much water
Growing corn	Many poor people cultivate (5)	Medium income	Little risk	Few problems, uses much inorganic fertilizer
Raising cattle	The poor can raise if they have capital	Relatively substantial: 2-3 million VND/year	Little risk (1)	Problematic for village hygiene
Local labour	Only the poor involved in this	Low income (e.g. 10.000VND/day for peeling peanuts)	Unstable (2)	
Local labour	Only the poor involved in this	Low income (e.g. 10.000VND/day for peeling peanuts)	Unstable (2)	
Trading agricultural products	No poor people involved	High income	Little risk (3)	
Collecting shellfish	Only the poor involved	Low income	No risk (4)	Shell is thrown everywhere
Forestation	Not many poor people involved	Low income	Little risk (4)	Prevents erosion, freshens air
Small industry	No poor people involved	Rather high income	No risk (4)	Waste, dust, noise
Tourism	No poor people involved	High income (2)	Little risk	Waste problems
Aquaculture	No poor people do	High income (3)	High risk	Needs much water, problems of the discharge of waste water, and ponds are processed with chemical substances
Large-scale poultry production	No poor people involved	Rather high income (5)	No risk so far	Poultry discharge
Catching fish and tiny shrimp	The poor catch products for themselves or work for others	Medium income	Little risk	Catching too small a size fish, use of dynamite, discharge of oil
Growing sesame	Not many poor people cultivate	Low income	Little risk	Little impact
Raising pigs and chickens	Many poor people involved	Low income	Occasional diseases	Problematic for sanitation
Growing mulberry and raising silk worm	Not many poor people involved	Medium income	Little risk	Little impact
Small trading	Some poor people involved	Low income	Little risk	Waste
Bamboo products	Many poor people involved	Low income	Little risk	Little impact

¹¹ Ranked score for that column

Growing fruit trees	Not many poor people cultivate	Low income	Little risk	
Growing other crops	Some poor people cultivate	Low income	Rather high risk	Uses pesticide and fertilizers harmful to health
Raising bees	Not many poor people do	Low income	Little risk	Positive pollination role
Producing salt		Very low income	Rather low risk	

3.1 *Opportunities for the development of traditional livelihoods*

3.1.1 **Agriculture in coastline communes**

Accessibility to the poor Despite poor natural conditions there is a high dependence on agriculture for livelihoods and food security. For many households, agriculture does not provide the main income but it does provide a stable income: ‘*what ever happens we will still have rice*’ (Group discussion, Quang Thai Commune, July 2004).

Associated risks Agriculture in these low lying coastal areas is prone to flooding and drought particularly where dykes are absent or ineffective. Significant infrastructure and technological investment is needed to increase the income from rice, the main agricultural crop. The sandy, salty and alum soil is prone to both flooding and drought which results in the salination of soil. The soil type, in combination with the poor irrigation system means that agriculture is dependent on the vagaries of the weather. Rains, which often occur at the start of the harvesting season force farmers to harvest rapidly to avoid the harsh sun and desiccation that often occurs after rain thus reducing productivity. Rains which occur just after the planting of seeds are problematic for germination. For example in 2003 most ground nut crops in Dien Trung Commune had to be replanted.

Due to high population densities there is a limited area of agricultural land, and this combined with the low productivity of land, limits the potential for increase in agricultural productivity. However, the low soil fertility is suitable for short duration cash crops such as sesame and peanut or corn in winter. Shifts in crop structure, for example to the growing corn of in winter, have contributed considerably to increases in income and decreases in the risks associated with growing rice. In 2000 the agricultural crop structure in Dien Trung Commune was shifted from two crops (rice and ground nut) to three crops (rice, ground nut and sesame). Ground nuts now represent the highest agricultural income, the sale of which covers the costs of buying rice for the household. Corn is increasingly popular as it has a relatively high income, requires less input and can be fed to cattle if it is not sold.

Livestock and poultry raising provide examples of important subsidiary incomes which can bring significant income for the household without requiring huge capital outlays or risks. Almost every household in Dien Trung Commune has cattle but ownership is less common in Quang Thai Commune. Households without livestock suffer from poorer soil quality due to the low organic material and lack

of fertiliser. Cattle-raising is viewed as a low risk activity which needs a small initial capital input and is guaranteed a market: *'we rarely eat any beef because it can be sold at a very high price'* (Group discussion, Dien Trung Commune, August, 2004). Here income from livestock sales is often used to provide the lump sums needed for school fees. However poultry, in particular, are prone to disease and pigs require vaccination.

Scope for income generation and growth

Strong linkages exist between agricultural production and other activities. Many of those interviewed who have been able to involve in off-farm wealth-accumulating activities have based initial activities on agricultural production. Agricultural trading and processing are options for income generation which many of the wealthier households in both communes are involved in.

Most poor households stress the lack of capital to invest in multiplier activities associated with agriculture such as agro-processing. Credit groups are developed in some areas but otherwise access to loans is problematic as bank loans are very short and private loans involve high interest rates. Because of complicated procedures in accessing loans many poor people are afraid of dealing with banks. Some borrow money through mass associations in the commune such as the Women's Union or the Farmer's Association. However, the poorest families are often not able to access these loans as they are perceived as too risky to lend to.

Large scale trading of agriculture products in coastline communes is lucrative, but on a small-scale does not bring high levels of income. Traders are often under pressure to lend to community members on credit; this lowers their profit and often forces them to have to take loans themselves. They are reluctant to turn down requests for credit as they are anxious to keep the custom and employment for their family members. Thus traders are playing an important role both as generating added value within the commune, but also acting as an informal support mechanism.

Associated environment and health problems

In terms of environmental impact, heavy pesticide use is polluting both surface and ground water as well as the soil. Corn, in particular, uses high levels of chemicals whereas legumes such as ground nut are better for the soil. Practises such as the use of plastic sheeting to decrease the amount of evaporating water from soil at the start of the cultivation season, results in plastic waste accumulation in the soil and the surrounding environment. There are associated problems of hygiene from poor waste management with all livestock and poultry-raising.

Pesticide and chemical use is reported to be a serious health issue with complaints of fatigue, skin reactions and headaches, particularly amongst the women. The gendered division of tasks in Dien Trung Commune whereby men are responsible for the spraying but women remove plastic which is used to keep moisture and pesticide in the soil, may result in increased exposure amongst women. Ergonomic work-

related health problems in terms of back and joint problems are common and will result in decreased productivity and quality of life with age.

**Box 2. Priorities for agricultural and fisheries production:
reducing risk and increasing return**

- **Improved irrigation and drainage systems.** Planning and construction of these should take into account the specific conditions facing the coastal zone such as increased erosion from wind, salinity and high levels of sedimentation in canals. Water penetration is a particular problem when constructing canals in sandy land.
- Planning for infrastructure development such as irrigation, drainage and the associated canal systems needs coordination at a level higher than the commune due to intra-commune linkages.
- **Crop structure diversification.** This may involve the encouragement of new crops such as mulberry or varieties which are suited to the specific soil conditions and have low upfront costs. However, market-demand and feasibility studies should be carried out before widespread promotion.
- **Promotion of small scale livestock development.** This may require small-scale credit schemes, the introduction of new varieties and assistance with planning for waste management.
- **Improvement of soil fertility.** The promotion of increased soil fertility through improved organic methods can bring improved agricultural returns.
- **Provision of fisheries support services.** Services to increase value from coastal fishing could aim to improve market access for fishery products. However, the provision of such services may have unforeseen impacts, for example the provision of ice facilities may lead to a decline in the amount of fish which is available for local processing, an activity which is often accessible to the poor.
- **Enhance the capacity of small-scale producers to deal with the private sector.** Increasing access to market information, for example, can ensure increased involvement with markets occurs on favourable terms and is not tied into unfavourable arrangements or interlocking social relationships. An increase in capacity will also increase demand on suppliers to be more responsive to producers' needs.
- **Adding value to agricultural production.** The diversification of activities and the development of agro-processing involves encouraging rural entrepreneurs through the provision of appropriate credit schemes and lowering risks associated with marketing.
- **Incorporation of gender implications.** There is a high level of gender differentiation in agricultural tasks which is important to incorporate in the design of targeted interventions. For example, in Dien Trung Commune women take much of the responsibility for agriculture and many men concentrate on more lucrative migration options returning only during the harvest and peak agricultural seasons.

3.1.2 Fisheries and marine-product collection

Accessibility to the poorest Despite falling fish stocks and the low intensity of the activity, fisheries plays an important role in incomes of many coastline communes. For some fishing is a primary occupation and for others for a seasonal activity in vulnerable periods or when other income options are not available. There are a large number of people who are involved in fishing as an irregular, seasonal or opportunistic manner as a component of a wider livelihood portfolio. Due to the variable patterns of land distribution, fishing is a more important activity in Quang Thai Commune where two thirds of the households do not have access to land.

Associated risks Productivity is seasonally and daily variable depending on weather conditions. Fishing is seen as risky from the point of view of personal safety and unpredictability of the catch.

The income from fisheries is not high and inputs such as nets and petrol can be expensive but it plays a vital role in many households. However, stocks have been particularly depleted in recent years resulting in a reduction in the number of fishers due to the low returns. Many fishing households in Quang Thai Commune have been forced to sell boats and nets and now work for others in the commune or elsewhere.

Reasons for the reduction in yield are attributed by local people to the use of fishing techniques which catch under-sized fish, the use of dynamite and electricity as well as the impact of intensive off-shore fishery. The predominant form of fisheries is low technology forms of 'in-shore' or 'shore-line' fishing which is increasingly in conflict with higher technology fishing. The way in which big boats frequently run over the nets of smaller boats is identified as a main problem.

In Dien Trung Commune, the collection of the shellfish *Ngao* and *Don* is an important subsidiary income in slack periods in households with surplus labour. As an open-access resource the user-rights are poorly defined and this represents an opportunity for the poorest. Collection of such open access products does not require a high degree of skill or equipment in contrast to marine fisheries. However, wealthier groups are also attracted to such resources particularly if their market value increases. The activity is under threat from the impact of other activities such as aquaculture or tourism but the price and returns on the activity are increasing due to the local tourist market. A project for raising *Ngao* which involved the enclosure of previously open-access areas was not viewed by the community as a desirable option as it excluded many people.

The quantity of fish caught is decreasing and fish is mainly used for food in the communes. The unpredictability and decreasing nature of the resource suggests that there is little scope for the intensification of this activity. In addition the nature of the coastline limits the potential for the through the construction of harbours or landing stages for larger boats thus suggesting few opportunities for adding value.

Scope for income generation and growth The opportunities for fish-processing vary. The development of large scale fish processing of fish products is constrained by raw material inputs in Dien Trung Commune, however small scale fish processing does bring a significant and steady income to some households in Quang Thai Commune with little associated risk.

There is some potential for future development as markets for other marine and inter-tidal products emerge. In areas with shallow sandy inter-tidal shores, the collection of shellfish collection is an important subsidiary income particularly in the light of recent price increases and the emergence of markets for new products. To date there is no report of resource shortage but this may change if market process increases yet further and stocks begin to deplete.

There is some evidence that low-level organisation in this sector can reduce risk. The establishment of the fishing cooperatives in Dien Trung Commune in early 1980s is said to have assisted fishers to maintain yields through the provision of equipment. Present day organisation in fishing appears to be limited to the informal sharing of effort in dragging in the boats, carrying the nets and fishing in groups of boats for safety reasons. Traditional equal income allocation systems create solidarity as employees and the boat owners suffer losses or profits equally.

3.2 Opportunities for the development of high input livelihood activities

3.2.1 Aquaculture

Accessibility to the poorest groups Aquaculture is a strategy which is promoted at the national level, as well as at the provincial and district level, as a means of creating jobs and increasing income in coastal areas. In both case-study communes the introduction of aquaculture has been relatively recent and an assessment in terms of long-term impact or levels of profit is difficult. However, early signs in the communes, coupled with experience from elsewhere in Vietnam, suggests that the rapid spread of aquaculture should be limited, and that measures should be introduced to reduce the environmental and social impact of new and existing aquaculture development.

Aquaculture is an not accessible opportunity to the poorest due to the required levels of capital, technology, infrastructure and land. Labour opportunities in aquaculture are limited. Far more seriously aquaculture can reduce options by decreasing access by the poorest to open-access resources.

Associated risks There are high risks for households involved in aquaculture in sandy areas. In the case of Quang Thai Commune a district pilot study has failed and the households involved suffered heavy debts. In Dien Trung Commune the experience has been mixed with a reported two thirds of households involved suffering a loss.

Many households have suffered losses due to a lack of fresh water. This necessitates a reliance on rainwater which makes producers vulnerable to climatic variation and unable to control the salinity of the pond. For effective aquaculture salinity needs to be varied at different stages in the process. In addition, there is a high risk of shrimp disease and limited techniques and resources for tackling such problems.

Box 3. The high risk nature of investment in aquaculture
Interview with Mr Nguyen, village leader, Dien Trung Commune

‘I am rather active and have tried a lot of different livelihoods. In 2001 a limited company from Hanoi and I invested 100 million VND in 2 hectares of aquaculture. I lease the area at a price of 1 million VND/ha/year. After 2 years we made a loss. In the first year, shrimp grew quickly but their growth rate then slowed down. When we harvested the shrimp were so small that they reached a low price. In the second year we made a loss due to shrimp disease. The biggest problem in raising shrimp here is the shortage of fresh water, and, because of ineffective planning, we only have one canal for both the water supply and the drainage.’

Aquaculture production is also particularly vulnerable to price fluctuations, increasing demand for quality standards, market saturation and inadequate infrastructure for a perishable product.

Scope for income generation and growth

Aquaculture can bring high profits in the short-term but maintaining such profit levels over a long time requires skill, technology and high levels of inputs. In many cases, low profit levels are restricting the building of proper infrastructure and ponds. The results of the investment by a Hanoi-based company in more intensive shrimp farming in Quang Thai Commune have yet to be assessed as so far as they have only had one harvest.

Environmental impact

There are high potential impacts on other parts of the livelihood system. Shrimp-raising requires high levels of fresh water to regulate the salinity and these levels are commonly not available in coastal areas and the risk of salt water intrusion into the groundwater is high.

In all places visited, waste water from aquaculture ponds is directly discharged to sea without any processing. In Dien Trung Commune, the tourism site which is located near the aquaculture area will be seriously impacted by this discharge. Accumulation of waste and bacteria can pollute the surrounding water environment and, may in the future, affect the aquaculture ponds themselves. In some areas aquaculture is taking place in the zone occupied by coastal forest which reduces its role in storm protection.

Box 4. Recommendations for addressing for the risks associated with aquaculture

Tackling technical and environmental risks

- Mechanisms for minimising the amount of ground water utilised are vital and canal design which separates the function of water supply and drainage is crucial.
- Ponds for the processing of waste water prior to discharge to the sea are necessary to avoid negative impacts on other livelihood options such as fisheries or tourism.
- Integrated planning for aquaculture decreases the risk of one activity reducing the income of another e.g. the trade-offs between aquaculture, wild fisheries and tourism.
- Detailed financial and feasibility assessment of the infrastructure and sequencing in the provision of infrastructure should be carried out before aquaculture development.

Tackling financial and social risks

- Households who invest in aquaculture should be fully informed of the high risks of financial loss occurring to avoid high levels of unplanned debt.
- Appropriately targeted training and the provision of services such as credit and subsidized inputs (as occurs in agriculture), are necessary to encourage the inclusion of the poorer households in aquaculture. The vulnerability of producers can also be reduced by developing more reliable marketing channels for aquaculture products. In the agricultural sector the agriculture co-operative and the farmer's associations have played an important role in improving access to markets, input and support services. Similar service providers for aquaculture services may help to increase accessibility of the activity to the poorest.
- Labour opportunities on aquaculture ponds beyond the family are limited. Assessments should consider the benefits of such an activity if it is displacing other livelihood options.
- In the case of Dien Trung Commune no community consultation was carried prior to the development of aquaculture. Doing so may help to highlight unforeseen social and environmental impact and avoid community disquiet.

3.2.2 Tourism and industrial development

There is high potential for tourism in coastal areas particularly in areas with sandy beaches or cultural heritage and good road access. Both case-study communes fall within the Provinces' priority areas for tourism, however, beyond some spontaneous construction of small shops in Dien Trung Commune, no development had commenced in either commune.

Box 5. Varying experiences of a large scale garment-producing factory located in a neighbouring commune to Quang Thai Commune

According to the vice director of the factory:

- Local workers are not skilled so the company has to carry out training. Despite this local workers demand a high salary.
- Salaries are often cut because they break the equipment or their work quality is bad.
- Workers are often absent for reasons such as weddings, funerals, or sickness in the family. This affects the production plans of the company.
- The company therefore prefers to employ labourers from further afield which is higher skilled and has less demands for working conditions and avoids negative impacts on production.

According to factory employees in Quang Thai Commune:

Unless the working conditions are stable and favourable and a regular income can be guaranteed, workers will prefer to migrate elsewhere.

Industrial development in coastline areas may be one solution to high levels of local underemployment. However, there are some very acute infrastructure gaps, for example investors in such areas do face infrastructure problems in terms of poor road and electricity supply which cannot provide more than domestic supply. In addition the presence of a labour supply is not straightforward (see Box 5).

Recommendations

From the point of view of poverty alleviation and sustainability of local livelihoods there is a clear need to minimise the potential negative impacts of activities such as tourism and industrial development. This may include:

- Clear land use planning to avoid the destruction of other livelihood sources through environmental degradation. The effective and equitable allocation of scarce water resources is key to avoiding conflict and ensuring sustainability. The scale and extent of tourism in these areas should be matched to the infrastructure for waste management and an assessment of the carrying capacity of the freshwater supply.
- Regulations and/or other safeguards to ensure that the benefits from external investment such as that associated with tourism accrue to the local area and that social impact is minimised. This may include requiring external and local investors to employ local labour and ensure adequate working conditions such as workers insurance and the establishment of labour unions. In terms of tourism this may involve training local people to play a role in tourism with appropriate management, enterprise development and marketing skills, encouraging the goods and services demanded by the tourism industry to be produced locally and competitively.

3.3 The importance of migration and mobility as livelihood strategies

Accessibility to the poorest groups The critical role of labour migration in transmitting growth has been underplayed in poverty interventions and policy for coastal areas. Migration of skilled and unskilled labour is an important part of the livelihood portfolios of coastline communes, and in many cases represents an exit-strategy from poverty.

Mobility has long been a feature of coastal livelihoods due to the dependence on seasonally variable natural resources. Migration usually takes place in slack agricultural seasons and can help to spread risk and allow individuals to respond to new opportunities and enable accumulation. Remittances are a vital and important part of the economies of most households. Agricultural production provides just enough for domestic food but other purchases often depend on remittance incomes.

Scope for income generation and growth The low returns from fishing and agriculture means that many of the poor rely on the selling of labour but the scarcity of labour opportunities in coastline communes require them to adopt more mobile means of employment.

In Dien Trung Commune, recent flows of labour migration are said to have begun in 1980s with a few women traders selling products in the uplands. On a larger scale, migration to work in quarries began in 1992. In Quang Thai Commune the commencement of large scale migration began in 1992 and corresponded with an increase in income levels.

There are high levels of gender differentiation in the migration patterns. Male migration occurs predominantly to the fishing fleets in Phu Quoc and female migration to the shoes and garment companies and industrial parks in the south. Less skilled, female and child migration occurs sporadically to urban and local centres and these figures are often unrecorded. Migration of children is also common in the summer months to cover school costs.

Migration patterns are changing and are no longer driven only by the seasonal availability of resources. Increasingly migration is taking place in reaction to other factors such as exclusion from resources, rising urban wages and the expansion of the manufacturing industry. There have been some examples of official foreign migration but the initial costs are high and experience has not been altogether positive.

Associated risks There is however a variation in the experience of migration. Relatively high incomes are possible from long distance migration to fishing fleets but the poorest households are less able to take part in this activity because of poor health, the need for upfront capital, and responsibilities at home (i.e. for those who have high ratios of elderly and children). Good health is an important prerequisite for migration particularly for the types of migration which bring the highest returns.

Poor health is the biggest reported barrier preventing the poorest from not being able to get involved in migration activities.

Migration often results in increased vulnerability. Migrants often work under poor labour standards and rarely receive pensions for the work carried out or welfare payments. Registration requirements mean that they usually cannot access services such as health and education in their destination which means, for example that health regular checks are interrupted. Migrants who work on fishing fleets seem to enjoy better working conditions due to a choice of employers, provision of insurance and increasing salaries. Many health problems seen in the poorest households in the case-study communes were associated with migration activities such as construction or involvement in the war.

Migration can also cause instability in the family. Male migration places extra burden on women and elderly who resume increased responsibility for domestic activities, agricultural production and often have to borrow money for children's school fees or sickness.

Taking a livelihood approach to poverty issues in coastline communes requires thinking beyond specific infrastructure needs and exploring different ways of tackling poverty. Many of the activities in coastline communes appear to have limited scope for adding value in terms of increased income generation or productivity. It may well be that options such as migration remain one of the most positive options.

There is a need to address the constraints that migrants face in reducing risk and increasing remittance transfers to ensure migrants can increase the value gained from their activity. A holistic approach to 'poverty-reducing' migration and mobility could therefore result in many positive gains for livelihoods. Providing support to migrants requires moving away from a targeted approach which addresses the 'poverty of place' and the assumption that the poor are sedentary. This however may be problematic to support under the place-specific design of Decision 257 and raises the question of how such approaches should be funded. It cannot be assumed however that policies which help migrants will necessarily help the poor.

Box 6. Increasing incomes and reducing risks for migrants

- Increased technical training and vocational skills to allow migrants to access higher paid and more secure jobs.
- Exploration of ways in which migrants can access services such as health, education and fair working conditions in destination areas thus reducing the vulnerabilities which they face.
- Explore opportunities for leasing of land by families who are temporarily migrating or suffering from labour shortage.
- Support the important role of women in agricultural activities due to male migration, for example by ensuring the appropriate targeting of services such agricultural extension.

4. MAIN ISSUES OF RELEVANCE TO FUTURE POVERTY ALLEVIATION PROGRAMS IN COASTLINE COMMUNES

4.1 *Specific priorities for infrastructure development in coastline communes in Program 257*

Productive infrastructure such as irrigation and drainage canals are essential for increases in agricultural productivity but have to be carefully designed to take account of specific features such as the heavy siltation of canals, the erosion of structures built from sand and a high likelihood of flooding due to the proximity to the coast and the low-lying water table. The intensity of land use, the limitation of the water sources and the high level of investment which some activities involve, all require careful technical and organisational planning.

The specific characteristics of labour in coastline communes suggest that infrastructure development should absorb as much surplus labour as possible. There should also be some consideration of the substitution of community financial contributions (which can be a burden on the poorest) for labour contributions. As one farmer stressed *'my family can build the canal ourselves because it is simple, but the authorities are required to sign a contract with a contractor'*. The design of infrastructure investment should also take account of seasonal migration and agricultural patterns in planning construction. For example, women should be actively involved in decision-making due to their dominant role in the local activities whilst men are absent.

Using investment available under Program 257 to promote activities such as aquaculture and tourism where immediate benefit to the poorest is often not straightforward, and may be difficult to justify. It may be that the burden for financing of productive infrastructure development should not necessarily fall on the central government but that it could be expected to involve a variety of forms of funding such as joint venture or provincial level funding. For tourism in particular, private funding is available, but for activities such as agriculture, public investment is needed to stimulate private investment. On the other hand it may be that the role of public funds is to limit the negative effect on the poorest.

Because of the complexity of design issues that infrastructure development in coastal areas faces it is important that, what ever the sources of funding, commune level consultation and monitoring processes, are adhered to. Investment from private sources, or from public sources which do not pass through the commune administration, risk bypassing the important commune level consultation and monitoring procedures. In Dien Trung Commune the process of aquaculture development, which initiated from the province, had taken place not only without any form of community consultation and also with very little involvement of the commune administration itself. This has increased the potential for negative environmental and social impact and community disquiet: *'we were just informed of the planning and the construction. After that we were invited to the completion but it was more like a party'* (People's Committee member, Dien Trung Commune). This is in contrast to the process of planning and consultation for the building of the main drainage canal where the community were consulted to a large degree (see Annex 3 for diagrams illustrating the different consultation processes which took place during the planning of these two infrastructure developments).

It is recognised that in communes where there is a significant amount of investment in productive infrastructure, requirements for consultation, monitoring and maintenance may place an excessive burden on the administration and the community. This may require responsibility to be transferred to some other body or the need to increase capacity to perform the role of

infrastructure management and regulation. However, the commune administration should maintain some regulatory or oversight mechanism.

The requirement for community contribution does not necessarily bring increased involvement in decision making or a sense of ‘ownership’. The burden placed on the community for contribution in the light of other planned and ongoing contributions must be considered.

4.2 Ensuring stability of income and accessibility to the very poorest

In contrast to the upland areas of Vietnam (where the majority of the funds under Program 135 have been invested) coastline communes have the potential for more intensive forms of growth and therefore exacerbation of income inequality. This heightens the need for targeting poverty interventions *within* the commune.

It is important to ensure that access to resources and other livelihood opportunities are not weakened by the introduction of new development options. This requires a recognition of the important role of agriculture and natural fisheries for stable (if low) household income and the resilience of the household economy to deal with shocks.

‘Open-access’ resources such as fish and shellfish, play an important role in the livelihood portfolios of the poorest households. The privatisation of inter-tidal areas through developments such as aquaculture or ‘enclosed’/private shell-fish farming can have a serious impact on these households.

There may be limited potential to intensify agriculture or fisheries due to the natural conditions and the cost of doing so, but such low income activities continue to play an important role in providing a basic income and a buffer against shock. The focus should be on options which are accessible to the poorest, providing stable and predictable income, low upfront investment and using limited land area such as livestock production and small scale fisheries processing. Opportunities for increasing income from agriculture and fisheries do exist and require interventions such as the extension of drainage and irrigation schemes, crop diversification, and the introduction of new varieties and crops such as mulberry. At the same time it should be recognised that these options are most likely to be taken up by the better-resourced and informed farmers.

Certainly a distinction needs to be made between those who are able to engage in productive sectors and those who will benefit from increased productivity through working as labourers. For the poorest, the main positive changes are more likely to come through associated changes such as increases in demand for labour which raise wage rates.

Due to the poor natural environment and decreasing fisheries, one of the greatest assets that these areas possess is labour. For people to benefit more fully from new opportunities associated with increased mobility, industrial investment and tourism there is a need for widening access to education and training opportunities, credit and information. Currently such opportunities are more accessible to the wealthier households creating an unfair distribution of opportunities. In areas with high levels of gender-specific mobility it is important that training opportunities are targeted accordingly.

4.3 Ensuring that opportunities for growth and investment bring poverty alleviation

Much of the concern which we encountered in our interviews at the provincial and district levels was about how to increase investment and not specifically about how to make such investment pro-poor. However, most of the growth opportunities for investment in the coastal communes visited, such as tourism and aquaculture, are highly risky and inaccessible to the poorest. The better off, with access to capital, skills and ability to absorb the risks are more able to take up these opportunities. Extra consideration therefore needs to be given to methods for reducing the risk of such activities and thus increase accessibility to the poorest, as well as decreasing the negative impact on the poor.

The involvement of the private sector in new development opportunities such as tourism and industry could be encouraged through subsidies, patterns of taxation and incentives such as infrastructure provision but there is a need for regulations to ensure pro-poor benefits. These may include:

- Developing regulations for external investment which ensure benefit accrues to the local area such as requirements for employing local labour, and for providing minimum wages and labour standards.
- Ensuring environmental impact requirements are adhered to. The scale of productive activities should be matched to available infrastructure for waste management and the carrying capacity of the freshwater supply.

Box 7. Titanium Mining: an example of an environmental and social dilemma facing coastline communes

Titanium mining has been carried out at a low level at the rear zone of the beach in Quang Thai Commune level since the mid 1990s. Contracts for exploitation were held by a handful of contractors and this activity has, at its peak, been responsible for the employment of relatively large numbers of local labourers (up to 500 earning an income of 15,000 to 18,000/day). Working conditions are reported to have been poor. Current provincial regulations targeting chromium mining inland have officially stopped this activity. It has caused disquiet in the commune with complaints that the activity is destroying the coastal forest and soil structure and thus increasing vulnerability to storm damage. There has been no enforcement of EIA requirements. However, investment in equipment by the contractors has been high and some are continuing production.

This provides a clear example of the need to regulate the private sector, for economic forecasting and for environmental planning before such contracts are given. As well as the need for provincial level planning in terms of limiting processing capacity until the sustainable exploitation of the raw material can be guaranteed.

The impact of development opportunities should be assessed in terms of the quality and quantity of labour demand. Interventions should aim to avoid creating increased labour redundancy. Options such as aquaculture may result in increased unemployment due to the need for less labour and skills which may not be present in the locality.

The reduction of risk for investors needs careful consideration of the market in terms of supply and demand. Detailed market feasibility studies and predictions should be carried out before encouraging the development of particular cash crops such as shrimp or the development of opportunities dependent on unpredictable global or regional markets such as tourism.

Gains could be made from enhancing the capacity of small-scale producers to deal with the private sector for example, increasing access to market information to ensure increased involvement with markets occurs on favourable terms and are not tied into unfavourable arrangements or social relationships, as well as ensuring that suppliers of farm inputs or marketing outputs are more responsive and accountable.

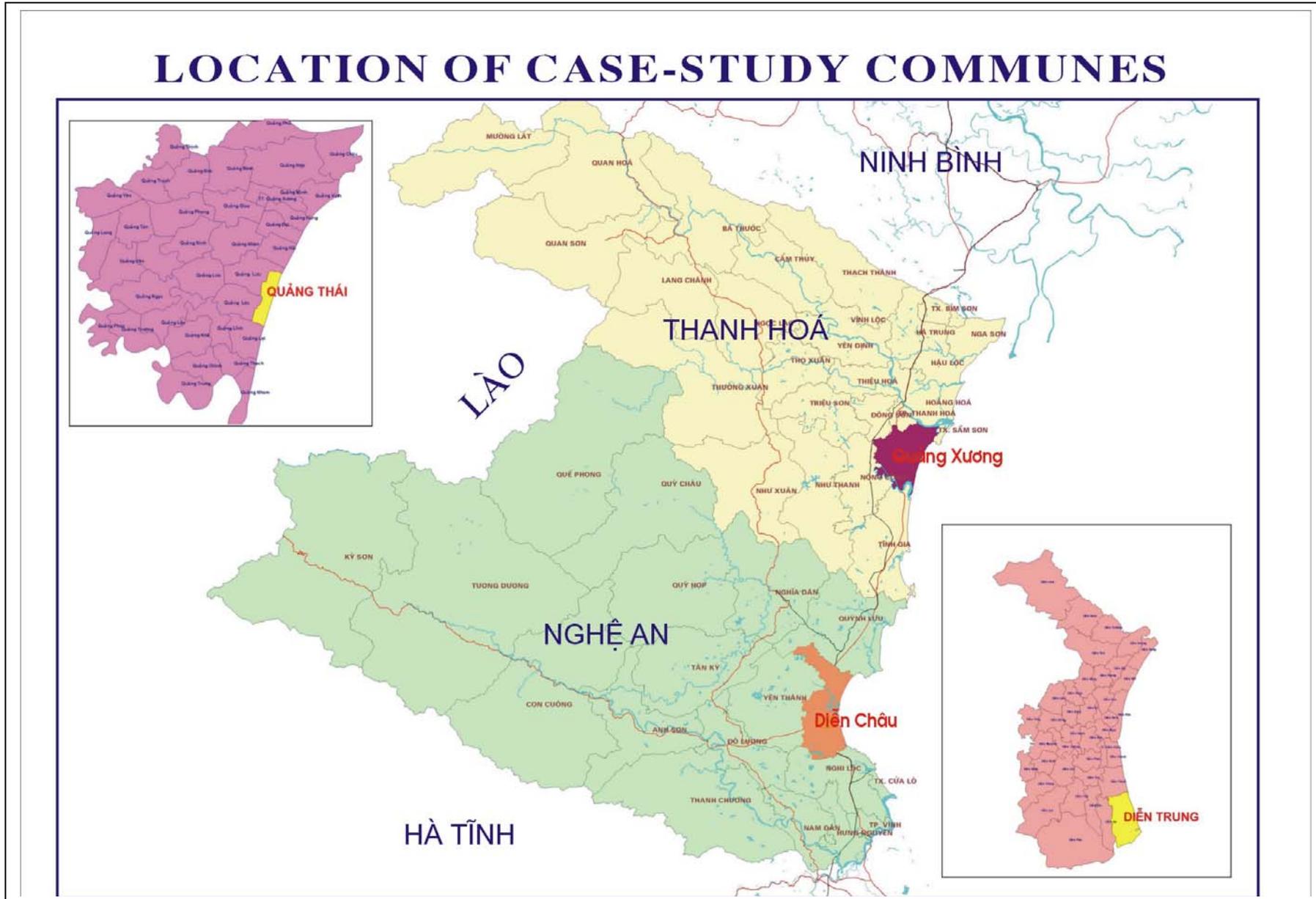
Many of the larger scale development plans for tourism, industry or aquaculture which these communes fall under will involve the need for resettlement. Strategies and guidelines for minimisation of impact on the poorest and existing livelihoods is crucial. Resettlement as a result of road construction in 1977 in Dien Trung Commune was referred to as one of the main factors causing discontent in the commune, and this is remembered still almost 30 years later.

Concluding remarks

Poverty is different in coastal areas: livelihoods are multi-occupational and multi-locational and this results in features such as seasonal underemployment, high levels of gender-differentiated mobility and potential for growth related activities. Poverty interventions should consider the trade-offs between growth, increased risk and environmental impact by aiming at increasing productivity but at the same time reducing variance around rising productivity.

Perhaps of most relevance to Decision No.257 is the way in which many of the opportunities for growth have the potential to result in significant inequality. This emphasises the need for the careful targeting of funds for poverty alleviation *within* the commune. Unless productive activities can be made more accessible to the poorest groups it may be hard to justify spending poverty funds on productive infrastructure.

Annex 1. Map showing the location of the case-study communes



Annex 2: Quang Thai Commune, Thanh Hoa Province

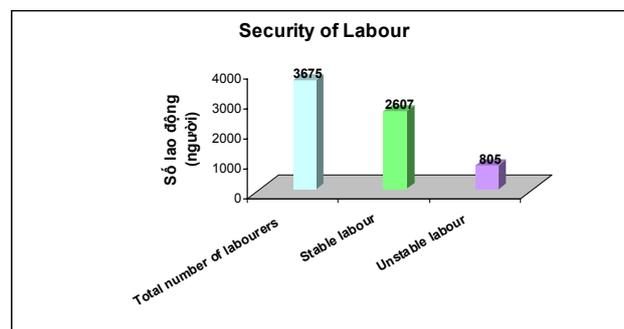
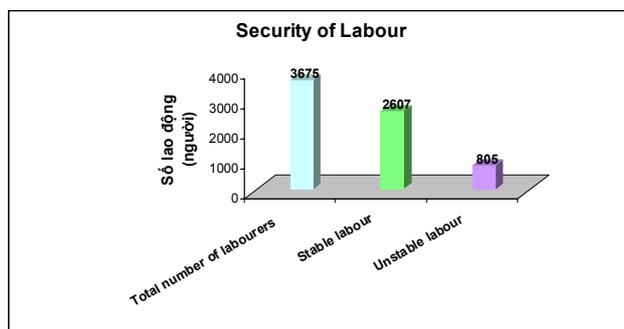
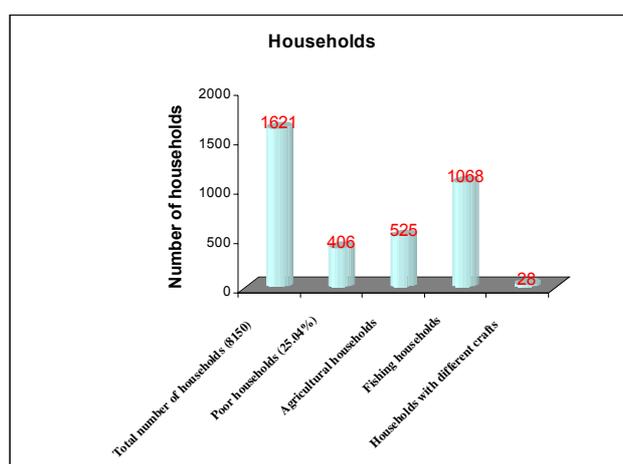
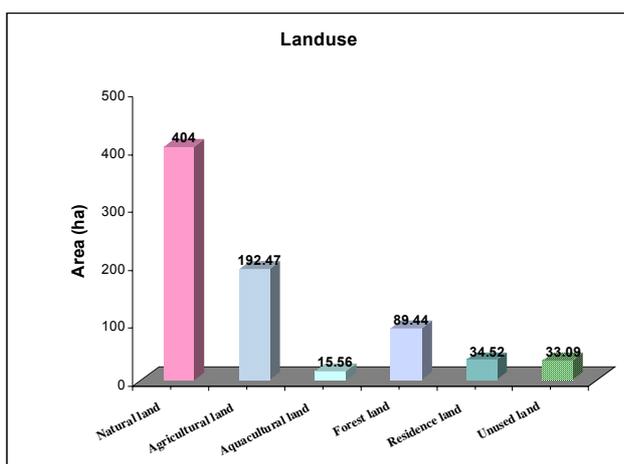
Context and research results

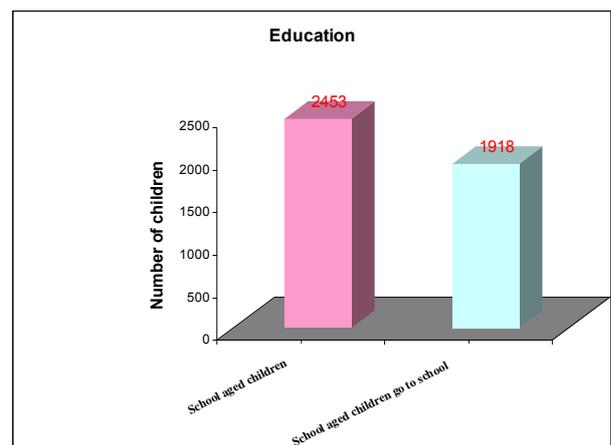
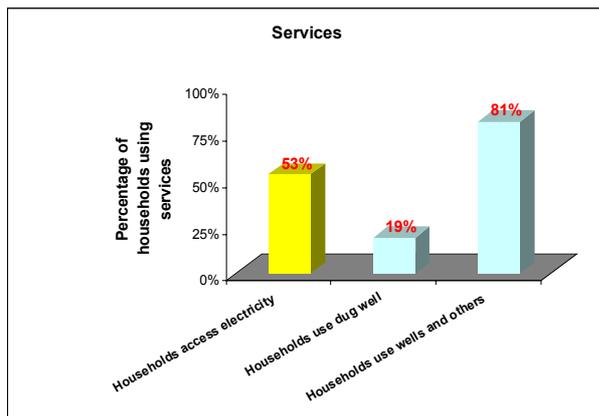
Hoang Van Son, Cao Tien Viet,
Vu Dien Xiem and Cecilia Luttrell

1. General introduction to Quang Thai Commune

Quang Thai Commune is one of three communes under Program 257 in the coastal area of Quang Xuong District, Thanh Hoa Province. The commune has 4.8 km of coastline.

Commune statistics of the natural, economic, and social situation (Source: Annual report of Quang Thai Commune, 2003)





2. Main livelihood issues in Quang Thai Commune

Natural context

The commune lies along the coast and the width of the commune varies between 500 m and 1km. The coastline is 4,8 km long and is lined by about 100 hectares of *casuarina* plantation forest and a white sandy beach. The climate is unfavourable and production depends on the weather. Coastal marine resources are the major resource of Quang Thai and fishing is the traditional occupation but recently fish stocks have reduced. According to fishermen this is due to unsuitable use of unsustainable fishing techniques such as catching undersized fish and the use of mines and electricity. Increasing numbers of large trawlers are catching fish off-shore which is also said to be adversely affecting fish stocks. Two thirds of the households are fishermen and do not have agriculture land, one third of the commune households are agricultural households, but because of limited income these households also work for other fishermen in the commune or elsewhere. Many fishing households have also sold their boats and nets and now work for others in the commune or in other provinces.

Agricultural land is limited and ranges from 330 to 400m² per capita. Much of the land lies along a drainage canal so it is easily flooded in the wet season. Rice cultivation is not very profitable so many also work as agricultural labourers. Some households lend their land to other households as they do not want to cultivate it.

In the last few years titanium mining has been carried out along the beach but has recently been banned. Relatively large numbers of local labourers (up to 500) have been involved in this activity earning an income of 15,000 to 18,000 VND per day. One company from Hanoi has invested in raising shrimp in this commune but few local people have participated in this activity. As they began their activities one season ago it is hard to assess the effectiveness at this early stage. They have not yet made any contribution to the local government. In addition to this, four rich households in the commune invested in a provincial and district aquaculture project but they made a loss and therefore did not invest in this activity anymore.

Box 1. Interview with mixed fishing/agriculture household

Mr Viet has three *sao* of agricultural land. He grows two 2 crops per annum but due to flooding he only harvests in the spring. The income is 1.2 to 2 'ta' per *sao*. After leaving the army in 1994 he had a loan of 30 million VND to invest in fishing but he was inexperienced. To try to overcome this he employed five fishermen but they were also not very experienced and the income allocation was not very beneficial to the him despite being the owner as profits were divided into equal parts. After a few years his business failed and he begun to work for other fishermen. His family still owes 30 million VND and their annual income is just enough for family expenses and the loan repayment.

Human resources

There are high levels of underemployment and short-term migration is common. Official figures put the number of adult migrants as over 1000 labourers. Those with higher levels of skills move to industrial areas and lower skilled migrants are carrying out activities such as newspaper selling and shoe polishing. Migrants from Quang Thai Commune are often perceived to be migrating in order to beg, this narrative is based on a complex combination of local tradition and external perception and due to the sensitivity of the issue our research did not focus on this aspect. Migration can have a bad effect on children's study and access to have health care.

A high level of cooperation within the commune is shown in the sharing of effort for fishing such as the dragging of the boats, carrying the nets and groups which often fish together in the same areas for support in times of need. Traditional income allocation mechanisms in the fishing teams, which divide income equally between the employees also create solidarity as the boat owners and the crew profit and benefit equally. Families with more than two labourers can make a profit from fishing but those with any less are at risk of making a loss due to the annual costs of fishing tools equipment.

Box 2 Experience from the vice director of a large scale garment-producing factory located in a neighbouring commune to Quang Thai Commune

- Local workers are not skilled so the company has to carry out training. Local workers demand a high salary despite their low skills.
- Salaries are often cut because they break the equipment or their work quality is bad.
- Workers are often absent due to unimportant reasons such as participating in wedding, funerals, or due to sickness in the family. This affects the production plan of the company.
- The company therefore prefers to employ labourers from further a field to avoid such impacts on production.
- *On the other-hand an informant from Quang Thai claimed that one worker in this company received only 500 VND as a salary a month because he broke needles and his product quality was bad.*

Financial capital

There is a shortage of investment in production. Different kinds of loans are available depending on the purpose of the debt. People are constrained by the short length of official loan durations and many households are in debt. Most loans are used to deal with capital shortage for family

expenses when for example, family members have not sent remittances on time. These loans are often based on the mutual trust and do not have a contract.

Financial resources to invest in coastal communes can come from many sources. For example a company has invested in aquaculture in Quang Thai. Some successful migrants have returned to invest in their home area. One example of this is a garment producing company in Quang Loi (the neighbouring commune to Quang Thai which is also targeted by Decision 257) set up by migrants returning from Germany.

Social capital

Local mass associations are active and the staff are composed of retired state staff. There is a need for vocational training centres: not only to concentrate on training skills but on industrial labour working conditions and management style.

A project run by the Institute of Environment and Sustainable Development is researching the ability of the poor in using sandy land in coastal zone in a sustainable way such as increasing organic matter in soil and growing grass for fodder.

Infrastructure

Quang Thai does not have much infrastructure development and the inter-village roads are sandy but it is better off than many upland communities because of the military road which goes across the commune. The main drainage is the Rao river which drains-off for nine coastal communes. The drainage helps to resolve the floods in agricultural area, however, because of sand river banks is easy to be extended, the irrigation function is reduced.

3. Opportunities to develop resources and socio-economic situation

Local people have the techniques and skills to produce high quality fish sauce but they do not manage marketing well and depend completely on traders from other places. Therefore their products have a lower quality and the producers' prestige is affected. With suitable management methods to control their products' quality and increase the product prices in the market. One solution would be to cooperate to establish as their own agents.

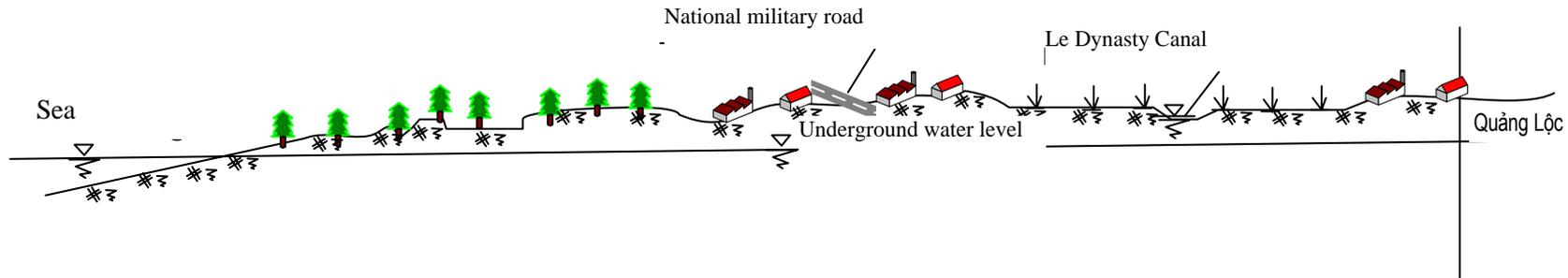
Abundant labour leads to high levels of migrants to meet the high demand of industrial zones. In order to create favourable conditions for poor labourers and so that they have better chances in looking for job, they need training. There should also be regulations ensuring contracts and social insurance for labourers. According to discussions with fishing households the number of people migrating to work as fishers for others returning home will decrease because the salaries have dropped. Salaries have fallen due to the high numbers who are working as fishers.

Previously there was a handicraft cooperative which exported to Eastern Europe. Resurrecting this activity would use local surplus labour but the access to markets is uncertain. The commune is adjacent to Sam Son tourist site which provides potential for developing services, family handicraft as well as to changing crop structure to meet demands of the tourist site such as growing fruit trees and clean vegetables.

There is a need to examine carefully the plans for aquaculture in sandy areas. For households that can invest adequately in this risky activity there is a change. Irrigation planning needs to occur in integration with neighbouring communes. Methods to reduce the erosion of the Rac river should be considered.

Environmental transect of Quang Thai Commune

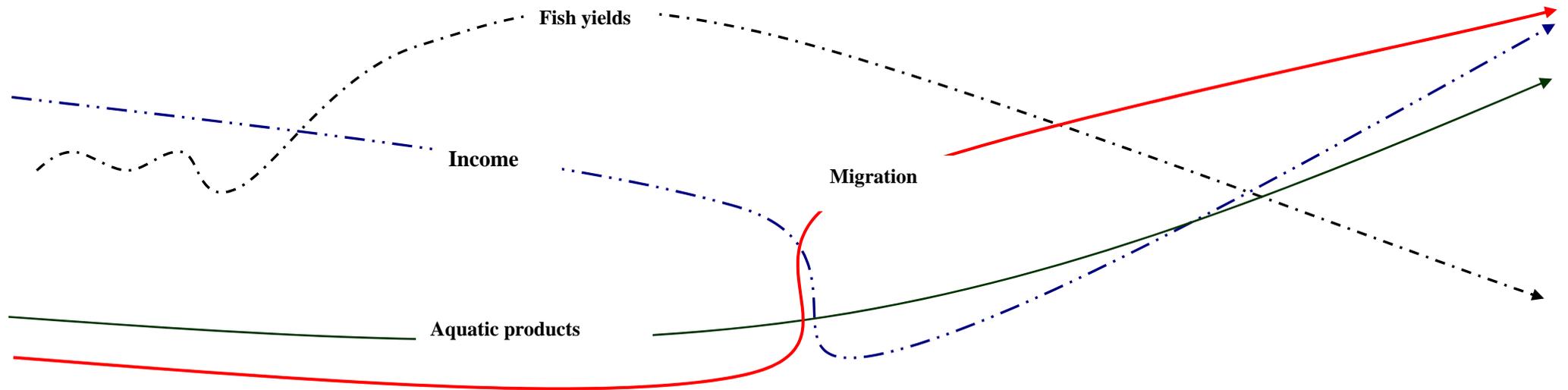
Participants: Mr. Cao Tien Viet (Chairman of People's Committee), Tran Doan, Dao The Hoi



Environmental factors	Titanium mining area	Shrimp ponds and production forest	Residential areas	Rice production land	Residential area
Environmental situation					
Water					
Surface water	None		Water storage is considerable. Quality is good for both domestic and irrigating activities, but some families are discharging waste near ground water sources which pollutes domestic water supply, causing eye sores and gynaecological problems Only in residential areas but limited, rain water, dirty domestic waste water.	No water fee collection. If left over water is available, used to irrigate other areas Clean water. Floods at 1.5-2m deep. Rainwater, sometimes floods in the wet season.	Waste domestic water.
Ground water	Clean water, good storage (9m deep).		Clean water, good storage (5-7m deep)	Clean water, is 1m deep in dry season. 0.5-1m deep.	
Soil	White sand, destroyed in places by titanium exploitation which breaks soil structure as holes 0.5-2m are dug. Casuarina forest vegetation.		Sandy mixed soil, light brown, used for growing crops and fruit trees, but with low productivity.	Sandy mixed soil, rice crops. The best soil but productivity is low as the amount of clay and organic matter is low.	Sandy mixed soil, light brown, used for growing crops and fruit trees: low productivity. Sandy soil causes problems for transportation.
Air	Fresh due to ocean.		Bad odour in toilet and pig raising areas due to temporary constructions. Problematic for health.	Bad smell of pesticide.	Bad odour in toilet and pig raising areas.

Impact and level				
Water Salty water		Some evidence of diseases like diarrhoea, eye sore and goitre which may be water related.	Floods in wet season lower the productivity and loss of crops.	
Fresh water	No evidence to show that the water level is becoming lower and the water is saltier.		Ground water is not very significant to production. It is hard to irrigate as the pumping station is not efficient and the capacity is fixed. So 70% of the area cannot be irrigated.	
Land	Hot, difficult to travel.	Low productivity.		
Air	Houses are affected by salt.	Appearance of respiratory disease and discomfort.		
Predictions and solutions				
Water Surface water		Construct appropriate drainage and irrigation scheme – far from residential areas. To improve the capacity for irrigation need to change the size of canal and improve the concrete. Improve water treatment.	Construct irrigation and drainage systems. Rice is not included in the planning for the irrigation system. Commune itself cannot solve many of the problems because multiple communes are involved. The new irrigation system which is needed would need to use remaining water from upstream areas.	
Ground water	Treat waste water of aquaculture.			
Soil	Build roads, stop exploiting titanium, plant and protect protection forests.	Use organic fertilizer, plant trees to keep moisture.	Improve land quality and irrigation, use organic fertilizer and good seeds.	Use organic fertilizer, plant trees to keep moisture.
	Build fish drying area away from residential areas. Keep waste water and processing equipment in a closed area.	Build toilets in household and private waste holes for domestic use to prevent public litter. Process waste water before discharging to the soil.		Build branch roads.
Air	Use septic tanks; prevent polluted air; restrict and improve the use of pesticides; strict regulations on activities which cause environmental pollution – noise, dust and impact on landscape from construction.			

Historical line of Quang Thai Commune



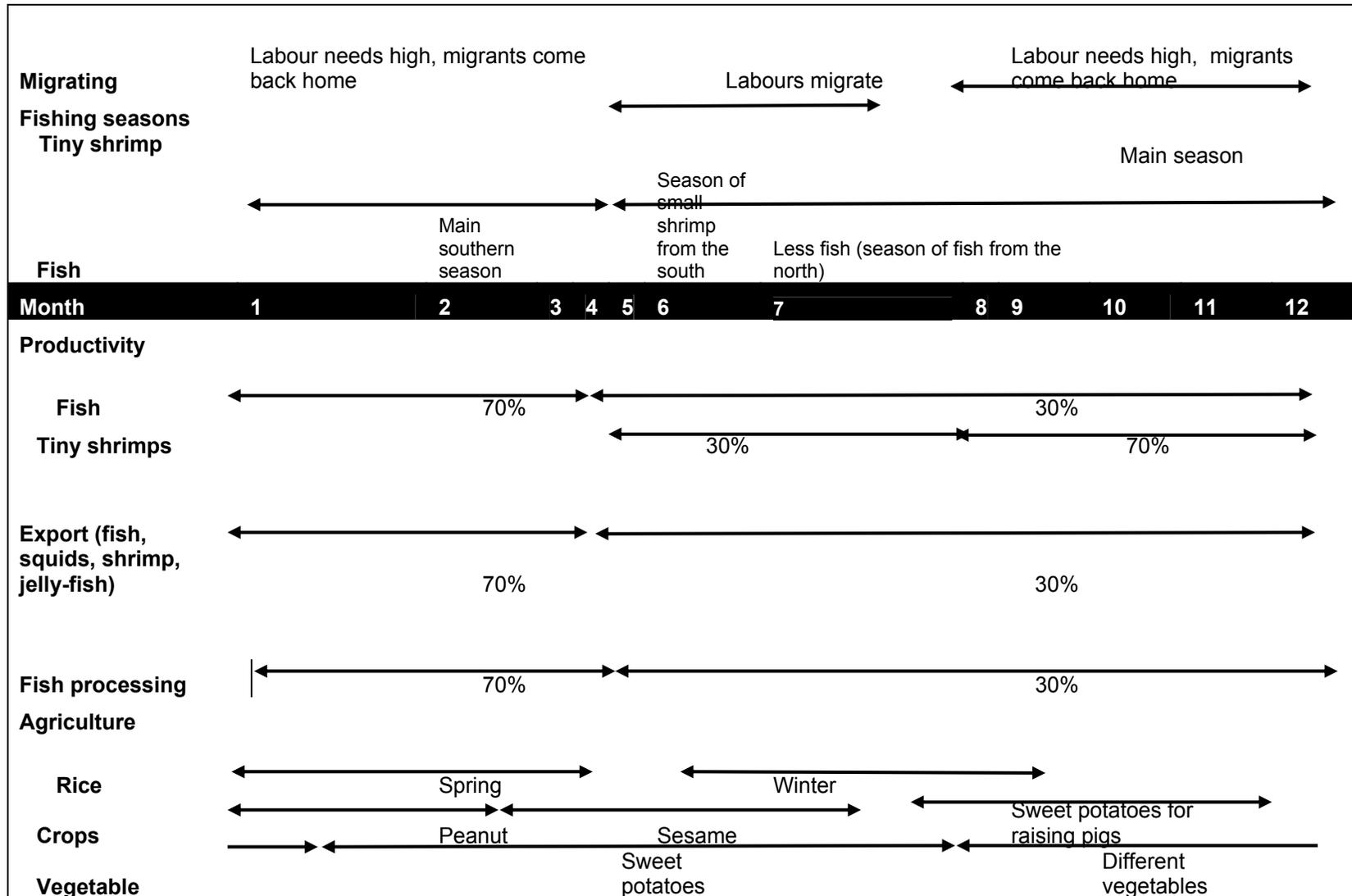
1959	1963	1966	1972	1982-3	1988-9	1990	1993	1995	1996	2004
Agricultural land reform / Every household had land	People removed to Tinh Gia under state policy	Agriculture & Fishery cooperatives were split, 2/3 fishing households & 1/3 agricultural households	2 handicraft coops formed to generate jobs for redundant fishing labour. Coops made mats and carpets to export to Eastern Europe	People removed to Song Be – Dong Nai under state policy	Eastern Europe market collapsed – 2 handicraft coops close. People started migrating to look for jobs. Fishing yields decrease. Income also fell sharply.	Fish price started to grow continuously. Income was improved gradually.	Land was allocated to agricultural households; fishing tools were given to fishing households.	Fishing households used motors for their boats. Electricity stations were built.	Some buy fishing equipment Others work as labourers or migrate to work on fishing fleets in south	Opening of the national military road and primary school building
			Fishing productivity increased							

Cao Tien Viet – Chairman of People’s Committee
 Le Ngoc Quan – President of Elder’s Association

Tran Hoa Sen – President of Farmer’s Association
 Dao The Hoi – Village leader – village 7

Kieu Thi Mien – omen’s Association
 Tran Kim Doan – Village leader – village 9

Seasonal livelihoods diagram



Summary of discussion on livelihood opportunities and constraints in Quang Thai Commune

Participants:

Cao Tien Viet, Chairman of Commune People's Committee

Tran Hoa Sen, Chairman of Farmer Association

Kieu Thi Mien, Chairman of Women's Union

Le Ngoc Quyen, chairman of elderly people association

Dao The Hoi, Hamlet 7 leader

Tran Kim Doan, Hamlet 9 leader

Natural Capital	Social Capital	Financial capital	Human capital	Material capital
<ul style="list-style-type: none"> • Shortage of agricultural land • Poor land • Scarcity of coastal resources • Lack of a harbour • Sandy beach can be used for aquaculture and tourism 	<ul style="list-style-type: none"> • Small livelihoods are not developed • Change in people's awareness of labour (migrating or trading) • There is cooperation in production • The mass associations support 'policy' and poor households 	<ul style="list-style-type: none"> • Short term loans are available • Many suffer from a lack of capital • Private loans have a higher interest rate • Capital raising from credit groups is developing 	<ul style="list-style-type: none"> • Low educational level • Lack of jobs • Migration is common • Labourers are not skilled • Women are vulnerable to diseases • When the husband migrates, the wife has additional burdens 	<ul style="list-style-type: none"> • No irrigation • Underdeveloped inter-village roads • The lower secondary school is not rebuilt • The health clinic does not meet the demand of primary care for people • Temporary market

Summary of discussion with group of women in Quang Thai Commune on problems faced in different livelihood activities

Participants:

Kieu Thi Mien
Nguyen Thi Ton

To Thi Lua
Tran Thi Phuong

Le Thi Duoc
Bui Thi Tu

Fishing	Agriculture	Issues specifically faced by women
<ul style="list-style-type: none"> The amount of fish has decreases Investment has increased Income is inappropriately allocated Unsustainable harvesting Low technology, small scale Pollution Lack of options Inappropriate labour allocation 	<ul style="list-style-type: none"> Land shortage Poor soil Unstable irrigation source Poor drainage Labour shortage because of migration Low income Some are not willing to do agriculture Lack of opportunities Inappropriate labour allocation 	<ul style="list-style-type: none"> Bad health, many diseases Dependence on husband Husbands migrate Husbands' health is bad Many debts Women migrate Lack of opportunities Inappropriate labour allocation

Summary of discussion with group of fishermen, Quang Thai Commune

Participants:

Hoang Duy Thang
Tran Kim Doan

Ong Thi Huong
Hoang Duy Hanh

To Thi Hanh
Le Trong Can

Le Ngoc Quyen

Main problems	Reasons	Solutions
<ul style="list-style-type: none"> Amount of fish has decreased Low technology, small scale Pollution The requirement for investment requirement has increased 	<ul style="list-style-type: none"> Big ships catch fish offshore; so less fish in coastal areas. Use of mines and electricity Catching small fish and young fish No harbours Short duration for loans and high interest rates Traditional activity which has not been intensified Lack of big fish or shrimp Waste from rivers Oil from boats Mines kill fish, and cause a bad odour of dead fish Higher price of petrol Higher price of fishing nets and other tools Need to purchase motors 	<ul style="list-style-type: none"> Ban the use of mines and electricity Dissemination of information on measures of offshore fishing management Longer loan duration Investment in more effective equipment Sharing of fishing experience Dissemination of environmental protection Encouraging people to build hygienic toilets

Detailed results of livelihood assessment in Quang Thai Commune

Participants:

Hoang Duy Thang;

Ong Thi Huong

To Thi Hanh

Le Ngoc Quyen

Tran Kim Doan

Hoang Duy Hanh

Le Trong Can

Livelihood assessment			Impact level ^(*)			Priority factors for development
Livelihood	Mark	Order	Income generation	Risk reduction	Accessibility to poorest	
Fish processing	21	1	8	7	6	Capital, market, road, production space
Growing rice	20	2	4	8	8	Irrigation, techniques (technology, machines)
Raising pigs	19	3	6	6	7	Techniques, capital, seeds, vets
Migrating	19	3	7	4	8	Technical training, schools, health clinic
Fishing	17	5	6	5	6	Investment in fishing tools, fishing techniques, market
Industry	17	5	6	5	6	Technical training, schools, electricity
Trading	16	7	5	5	6	Capital, market, road
Processing agricultural products	16	7	4	6	6	Market
Mining Titanium	15	9	6	3	6	
Raising poultry	14	10	5	4	5	Techniques, capital, seeds, vets
Growing other crops	10	11	4	4	2	Seeds and irrigation
Local labour	10	11	2	3	5	Health, health clinic, training
Growing fruit trees	9	13	3	3	3	Techniques, seeds
Aquaculture	6	14	3	2	1	Capital, techniques, electricity, water.

Summary of discussion on the impact of livelihoods on different aspects of development

Participants:

Hoang Duy Thang;
Le Ngoc Quyen

Ong Thi Huong
Tran Kim Doan

To Thi Hanh
Hoang Duy Hanh

Le Trong Can

Livelihoods	Income generation	Risk reduction	Accessibility to the poorest
Fish processing	High profit, higher than fishing	Low risk	Many poor people do
Growing rice	Low income	Stable	Many poor people do
Raising pigs	Contributing to the family income	Not many diseases	Many poor people do (agricultural households)
Migrating	High income	High risk	Many poor people do
Fishing	Major income of fishermen families	Loss of fishing tools, sometimes catching no fish	Many poor people do
Working in industrial park	Rather high income	Dependence on the factory	Poor people can do but they must be skilled
Trading	Contributing to the family income	Low risk	Many poor people do
Processing agricultural products	Contributing to the family income	No risk	Not many poor people do
Exploiting titanium	Rather high income	High risk	Mostly poor people do
Raising poultry	For family food	Many diseases	Every household does
Growing other crops	Low income	Dependence on weather conditions (drought)	Not many poor people do
Local labour	Low income	Unstable	Not many poor people do
Growing fruit trees	Low income	Dependence on weather conditions	No land
Aquaculture	Not yet assessed	High risk	No poor people do

Summary of discussion on priority factors for development

Participants:

Hoang Duy Thang;
Tran Kim Doan

Ong Thi Huong
Hoang Duy Hanh

To Thi Hanh
Le Trong Can

Le Ngoc Quyen

	Livelihoods	Priority factors for development
Income generation	<ul style="list-style-type: none"> • Fish processing • Migrating • Fishing • Raising pigs • Working in industrial park • Exploiting titanium 	<ul style="list-style-type: none"> • Market, road, capital • School, technical training, health clinic • School, fishing techniques, capital, market, health clinic • Technique, capital, seeds, vets • School, vocational training, electricity stations, health clinic
Risk reduction	<ul style="list-style-type: none"> • Growing rice • Fish processing • Raising pigs • Processing agricultural products 	<ul style="list-style-type: none"> • Irrigation • Market, road, capital • Techniques, capital, seeds, vets • Market, road
Impact on the poorest	<ul style="list-style-type: none"> • Growing rice • Migrating • Raising pigs • Fishing • Fish processing 	<ul style="list-style-type: none"> • Irrigation • Irrigation • Techniques, capital, seeds, vets • School, fishing techniques, capital, market, health clinic • Market, road, capital

Key informant group's discussion on the impact of infrastructure on livelihoods

Participants:

Hoang Duy Thang
 To Thi Hanh
 Tran Kim Doan
 Le Trong Can

Ong Thi Huong
 Le Ngoc Quyen
 Hoang Duy Hanh

Solutions	Who will benefit?	How
School	All people	Educational level is improved for vocational training, more opportunities of stable jobs
Health clinic	All people	Better community health care
Road	All people	Trading, development of services and tourism; information exchange
Market	All people	Trading, development of services
Irrigating and drainage system	Agricultural households	Stable production, increase of crop production, creating chance for shifting in crop structure
Road to fish port and market	Aquaculture households	Support for fish product trading in the commune and with others (under construction)
Domestic electricity	All people	Availability of domestic electricity and production development (Electricity is available)

Annex 3: Dien Trung Commune, Nghe An Province

Context and reseach results

Hoang Van Son, Ngo Lan,
Ha Luong Thuan, and Cecilia Luttrell

1. The natural context

Dien Trung Commune is one of three poor communes in the coastal zone of Dien Chau District, Nghe An Province. Agricultural land in Dien Trung is poor, limited and the soil is saline. The low-lying nature of agricultural land and the abundance of streams results in frequent flooding and it is also prone to desiccation. The sandy soil has low fertility, but it is suitable for short-duration cash crops such as sesame and peanut or corn in the winter. The main crop faces many problems at the beginning and the end of the season because of rain. If it rains at the beginning of the season, seeds cannot germinate so farmers have to replant. For example in 2003 most peanut crops had to be replanted which caused prices to rise to about 14,000 VND/kilo. If it rains at the end of the season farmers have to harvest early to avoid desiccation from the sharp sun which comes after the rain, so productivity is not very high and the quality of peanuts is considerably reduced. Much of the agricultural land behind the beach has been converted to grow *Rau Muong* because it is not productive for rice growing. Corn has become an important crop in the winter and the shift in crop-structure has contributed considerably to an increase in people's income. Many have begun to grow corn and can raise their income through selling young corn and combining it with cattle and poultry-raising.

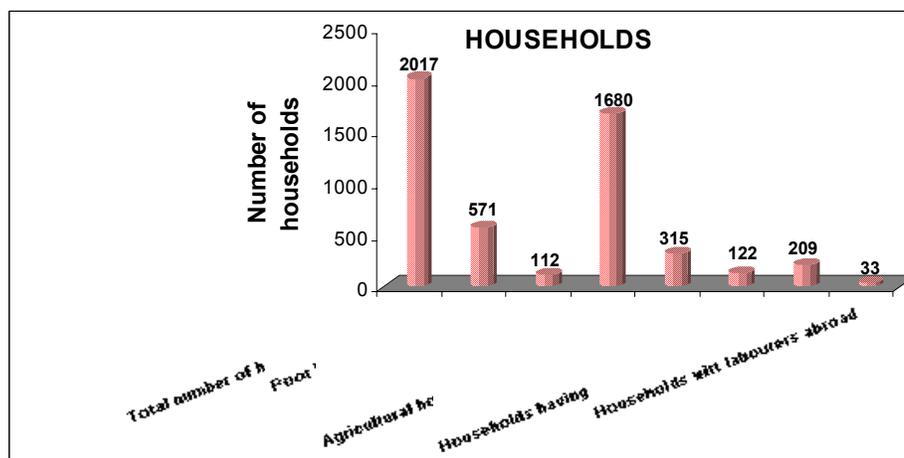
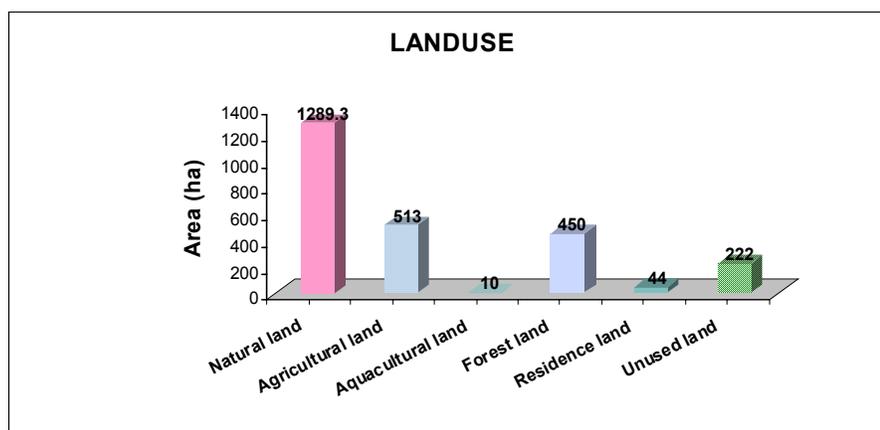
This area has been earmarked as having potential for aquaculture development so, over the last three years, a number of local people and people from other areas have invested in aquaculture. Few of these households have made a profit because they are dependent on fresh water and their technical skills are low. There is no treatment of aquatic waste water which is poured directly into the sea where is a tourism site nearby and therefore affects both the sea and aquaculture areas. The lack of fresh water to alter the salinity of ponds is problematic for shrimp farming. Using underground water for aquatic ponds leads to salinisation of ground water.

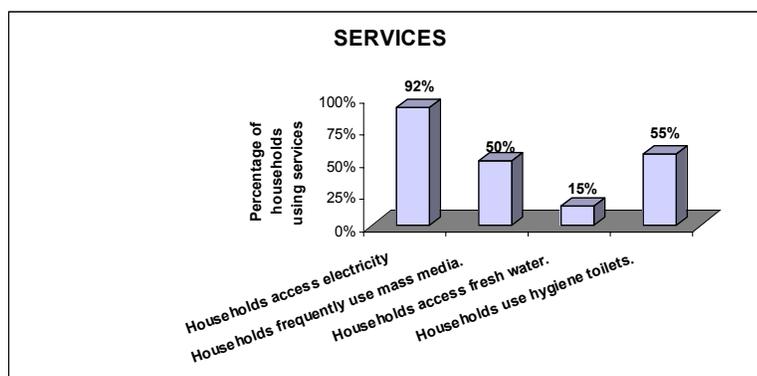
The coastline of the commune is 6.8 km long, however, fishing yields are decreasing because of limited fishing techniques and a reduction in the number of fish. The fish that is caught is mainly used for household food. In some parts of the commune the beach is flat and here the number of shell fish is increasing. Many people are involved in collecting them to sell to Dien Thanh tourism area.

A hill range runs from National Highway 1 to the sea, and An Duong Vuong Temple and Cuong Temple are located along this range. Protection forest in this area has been allocated to thirty households in the commune. This area falls within the area for the Provincial tourism plan. Under this plan the tourist area is called Den Cuong temple and Cua Hien estuary.

Box 1: Interview with Mr Nguyen, village leader, Dien Trung Commune

‘I am rather active and have tried a lot of different livelihoods. In 2001 a limited company from Hanoi and I invested 100 million VND in 2 hectares of aquaculture. I lease the area at a price of 1 million VND/ha /year. After 2 years we made a loss. In the first year, shrimp grew quickly at the beginning but then it slowed down. When we harvested them the shrimp were so small that they reached a low price. In the second year we made a loss due to shrimp disease. The biggest problem in raising shrimp in Dien Trung Commune is the shortage of fresh water, and, because of ineffective planning we only have one canal for both the water supply and the drainage.’





Commune statistics

(Source: Annual report of Dien Trung commune, 2003)

Total area:	1289,3 ha
Agriculture land:	513 ha (average 0,23ha/ labourer)
• Annual cultivation land:	469ha
Land for rice	
1-season rice:	29ha
2-season rice:	80ha
• Rich soil:	370ha
• land for aquaculture:	60ha
Forestry land:	450ha
Contracted land:	44ha
Non-use land:	222ha

Population and labour

There are 19 hamlets in the commune, with 2017 households and 9896 people.

Natural growth rate is 1,2%

Age	Total	Male	Female
Below 16	3898	1871	2027
Working age	4300	2107	2193
Above working age	1698	781	917
Total	9896	4759	5137

Number of labourers

Number of labour in working age	
• Employment:	3200
• Unemployment:	1100
Labour by economic activity:	
• Fishing	3910
• Handicraft:	170
• Services and trade:	220

Household structure

Structure by living standard

- Poor: 571 (28,4%)
- Average: 1334 (66,1%)
- Rich: 112 (5,5%)

b. Number of revolution martyr households : 209

c. Number of people subsidized by social policy program: 125

Infrastructure

Electricity:

- Number of household using electricity for living: 1800 (89,2%)

Road:

- Inter-commune: 9km
- Inter-hamlet: 21km

School:

- Kindergartens:
 - Area of semi-strong class room: 324m²
 - Other class room 160m²
- Primary school:
 - Area of strong class room: 1220m²
- Secondary school:
 - Area of semi-strong classroom: 1360m²
 - Other class room: 360m²

Percentage of households using clean water: 15%

Percentage with hygienic toilet: 54,5%

2. Main livelihood issues in Dien Trung Commune

Human resources

Educational levels are low and many children, especially from poor households, leave school after lower secondary school to find a job. Official figures for the number of labourers put the figure at 4300, most of which are not trained in professional skills. 1000 labourers are said to carry out seasonal migration. Male labourers tend to work for fishing fleets in Phu Quoc and provinces in the south, and female labourers for industrial parks in the south or shoe-making and similar activities in urban areas. Poor households who cannot raise the capital to go to the South do trading in Vinh City or neighbouring areas.

Financial resources

The lack of capital for productive activities is the most common constraint noted by interviewees. Many poor households can get small loans (0.5 to 1.5 million VND) but these loans are not used effectively because their technical knowledge is limited and they are inexperienced in loan management. The duration of loan is also seen to be too short to finish a cycle of production, especially for those loans used for cattle raising. However, many households that get loans which

are intended for production often use these loans for other purposes. Procedures that require borrowers to clear the debt before getting a new loan are a big barrier for many. Because of the complicated loan acquisition procedures many poor people are afraid of contacting banks. Borrowing money through mass associations in the commune such as the Farmer's and Women's Association (see Box 2) is more common and more accessible. Many local people have debts for informal loans. The procedures for these are very simple as for small loans (of less than a million) it is not necessary to have a contract. Interest rates are commonly 1% a month.

Box 2: Ms Thanh, 48 years old, poor household

Ms Thanh got a loan of 500,000 VND from the Farmer's Association to develop pig-raising. She paid the debt in 2003 but when she applied to get another loan the man from the Farmer's Association said that that it was someone else's turn. She has no information about bank policies on lending money to the poor and she has never been to a bank because they will not lend her money as her family is very poor.

Mass associations are responsible for communicating policies and guidelines from higher level to communities. The Farmer's Association, the Women's Union and the Veteran's Association are the most active in supporting local economic development. Examples of other development programs in Dien Trung include:

1. Program 661 in afforestation.
2. Support for growing cash crops such as sesame or peanut and a shift in crop structure.
3. Provincial and District aquaculture support programs.

Infrastructure

Infrastructure and transportation links in Dien Trung Commune are better compared than those in poor upland areas and transportation links are improving. About 1km of the commune is located along National Road 1 and the military road runs along the length of the commune. Most of the service infrastructure schemes are rather good and include a two-storey primary school, a lower secondary school, a health clinic and electricity stations. Inter-village roads are sandy and investment is needed for graveling.

Irrigation and aquaculture

The province and district has earmarked the coastal area of Dien Trung Commune for aquaculture and associated infrastructure development. The problem remains as to how local people, especially the poor can access these opportunities. Only large aquaculture areas employ local people but most aquaculture households have small-scale ponds of one to two hectares and they use their own family labour. Labourers in aquaculture must be skilled, suggesting the need for vocational training.

Box 3. Interview with Mr Thanh, poor farmer, Dien Trung Commune

Mr Thanh is a veteran who was affected by Agent Orange during the war. His 17 year old son has migrated to find work as an agricultural labourer and his three youngest children are at school. *'I do not have money to pay for their education. They are often supported by their teacher and some fees are wavered by the school but I think we cannot rely on that charity for much longer so I intend to let them leave school to find work'*. His house was damaged by storms and as a result he was nominated to receive support for its rebuilding. The district contributed 3 million VND, the commune Farmer's Association 2 million VND and he had to contribute 2 million VND which he has raised through loans. However, despite this assistance his agriculture land was seized by the commune as he was unable to pay his contribution for the construction of the Anh Ngai canal. *'I am not opposed to the mobilisation of capital for construction capital but there should be consideration for specific households.'*

It is necessary to have essential infrastructure for the shrimp farming area such as electricity, fresh water/sea water pumps and environmental monitoring stations to control environmental changes in shrimp pond area. In addition the quantity of underground water for shrimp farming should be reduced

Tourism

The southern part of Dien Trung Commune falls within the tourism development area of the province. Local labourers could become involved in services but they would need training. At present there are four small shops in the tourism site and the commune has decided to limit the number of such shops. These households are not poor and also rely on family labour.

Mulberry and silk-worm raising

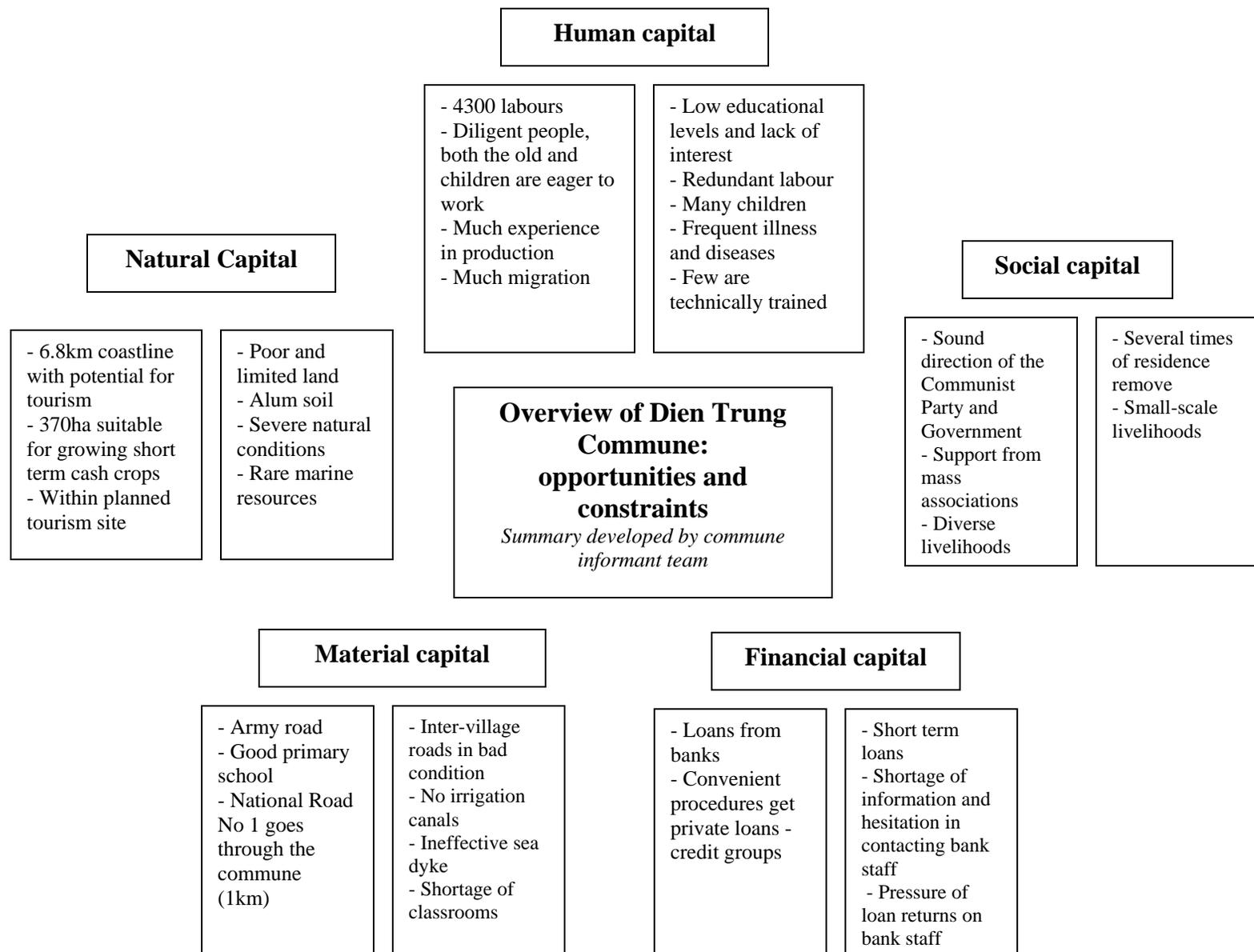
Mulberry grows well in Dien Trung. It was started as a model by some households in the Farmer's Association. The risks faced include disease, death of the worm when the weather changes and the low price of the cocoon but it is more effective than many other activities. Women can be involved in this activity and it has potential for decreasing dependence on the husband. An exchange of experience may help the expansion of this activity.

Intensive chicken raising

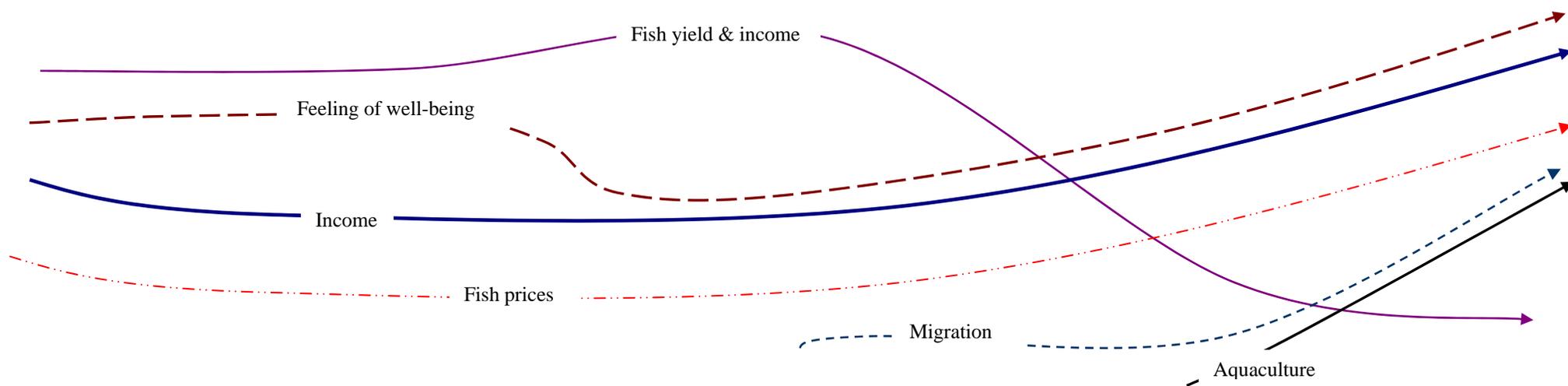
Some households have intensive chicken raising and have had satisfactory results although this was at the time of chicken flu. According to these households, only households with over VND 50million are able to raise intensive chicken, therefore, it is hard for poor households to do this activity.

Opportunities for poor households

Many poor households are not able to take advantage of new local opportunities. They lack communication skills and self confidence. It is also necessary to help them access social welfare. The rich are more able to take advantage opportunities to do business or to earn money for example they benefit much more from projects or bank loans than the poor. The capacity of the local administration in assisting the poor to access such opportunities is weak.



Historical line of Dien Trung Commune



8	1964-5	1975-6	1977-8	1979	1981	1986	1987-9	1989	1990	1994	2000	2002	2004
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3 agro-fishery coops created	Son Tinh Canal was built.	3 coops merged	People were moved towards the sea.	The coop was split into 3 coops.		Assets of 3 coops were sold to households.	People moved to residential areas. The sea dyke was built.	People cultivated small pieces of land & many stop growing rice. Rice crops reduced to 1 from 2		Land was allocated under long-term use	Crops were restructured into three crops.	Agricultural land was reallocated An Ngai Canal was built.	
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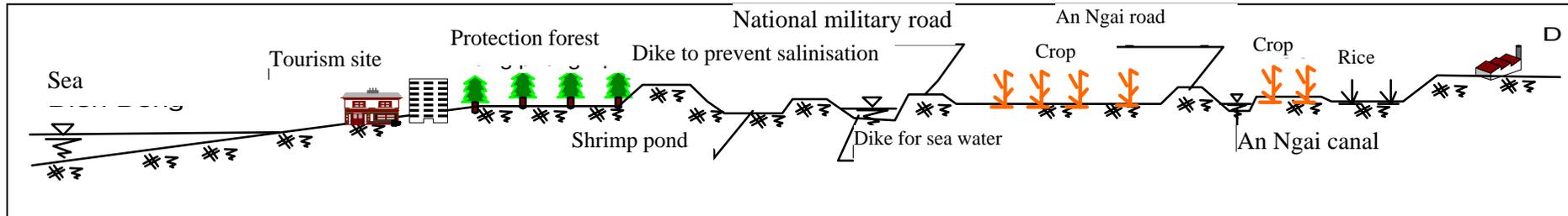
All land & cattle belonged to coops.	100 contract implemented. Two big storms in 1982 & 1989 caused hundreds of houses to collapse. Son Tinh Canal was filled naturally.	10 contract implemented	People used their own allocated land.
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Ngo Lan – Chairman of People’s Committee
 Dau Ngoc Hoa – President of Farmer’s Association
 Tran Van Can – Village leader

Nguyen Thi Ha - President of Women’s Association
 Hoang Trung Thanh – President of Veteran’s Association
 Cao Thach – Village leader

Environmental transect of Dien Trung Commune

Participants: Nguyen Viet Ngu Ha Van Lan Tran thi Mai Mai van Dung



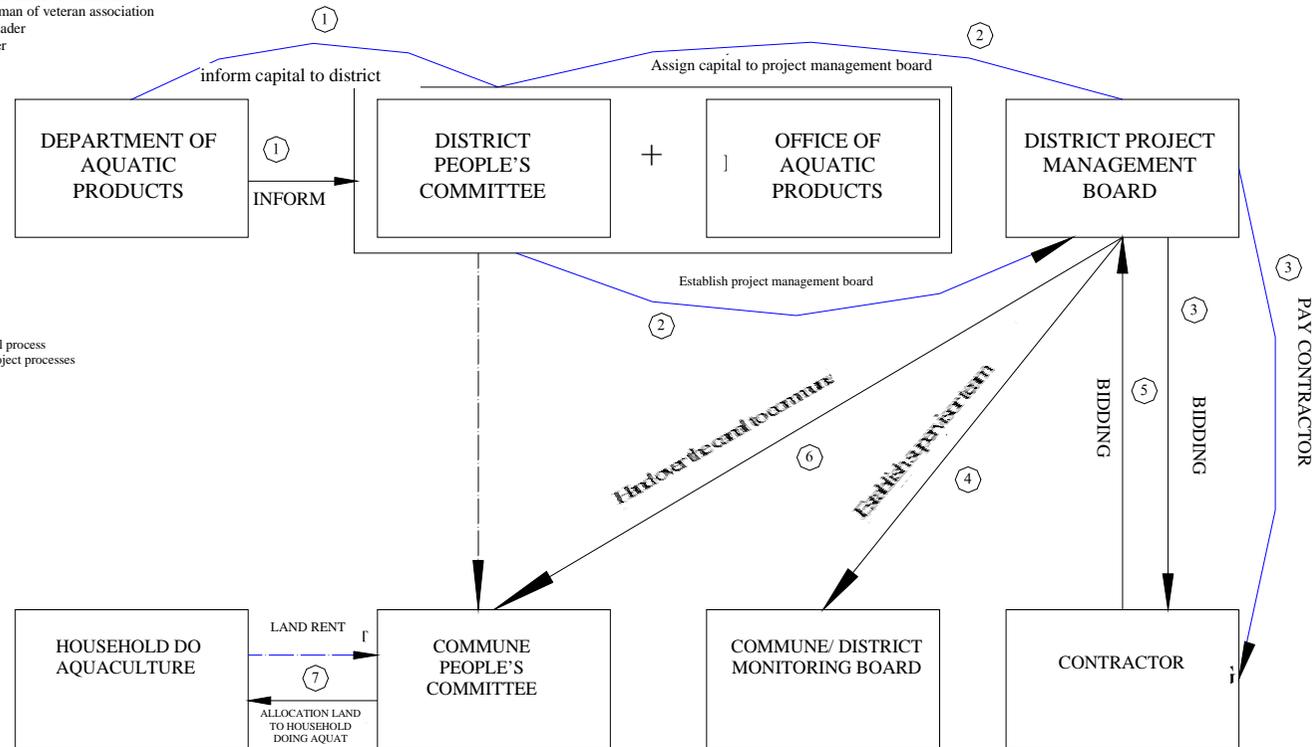
	Tourist site	Coastal protection Forest	Sea dyke	Aquaculture	Other crops	Paddy rice	Residential areas
History	Newly planned	Exists for a long time	Built after storms in 1988	Started in 2000	Have been grown for a long time	Have been grown for a long time	Have been established for a long time
Major features	Good environment. Narrow and rocky beach. Close to protection forest and aquaculture areas. No tourism activities are organised. Households have built small shops for selling drinks.	Runs along the coastline of the commune, 100m to 200m wide. Trees reach more than 15-20m with a density of 35-40 trees/100 m ² .	6.8km long. Built on sandy land with sandy mixed soil. Surface is eroded and lower than the designed standard (0.5-1m). Surface is improved in important areas of 100m length.	Developed under the provincial aquaculture project Program 224. Ponds, salt water supply canal and sluices have been built by the 17 aquaculture households. Industrial shrimp raising models can reach a productivity of more than 4 tons/ha. The pond area is 3000m ² – 6500m ² . Contracts are given for 20 years.	Sandy mixed soil, high land. 3 crops: peanut, sesame, and corn. It is often flooded at the end of peanut season. Pesticide is used.	Lower level-sandy clay. 1 crop/year (December to April), could grow 3 but limited by water. Uses pesticide.	Some households have moved twice because of storms. Most use deep ground water (4-5m) for domestic water. There is no separate waste water way, it often spreads in wet season. Most toilets are two-compartment latrines.
Problems	No specific planning or strategy; no electricity, fresh water supply or		Affected every year by tides and waves. Seriously eroded because of its sandy structure. Sea water	Shortage of fresh water. Salty water supply depends on tide. Shared water supply and drainage system.	Short of irrigating water. Some areas are flooded at start of rainy season because the drainage does not work. Water	Dependent on irrigation.	Fresh water becomes salty.

	infrastructure. Potential for water pollution caused by waste water from aquaculture and sewage		has twice come over the dyke, each time destroying more than 100ha. Some parts of the dyke are the village road. There is no budget for improvement.	Waste water is not treated before being discharged to the sea. Unstable electricity. There is no regulation on environmental protection.	percolation is very high and crop suffers drought. Peanut crop is often flooded at the end of the season.		
Environmental impact	Waste water from tourism may affect aquaculture.	Prevents storms and strong tides. Creates good landscape for the beach and filters off salty air moisture. Prevents erosion and moving sand. There is a commune regulation which helps reduce problems.	Positive impacts: prevents salty water from flooding agricultural land. Protects sea dyke inland area from being salty.	Impacts on coastal water environment and shrimp raising areas. Waste water is discharged directly to the sea. The discharging area is close to the planned tourism site.	Suitable crops for sandy land that faces water shortage. Some vegetables cannot be grown. Remaining can be used in raising pigs or as fuel. Using pesticide affects the environment, including water. No control or regulations over the use of chemicals – may affect tourism potential and fish stocks. In sandy areas people use plastic to prevent evaporation from seedling and leave it littered around.	Using pesticide affects surrounding areas, including water.	Uncontrolled waste.
Solutions	Integrated planning e.g. where will water discharge from aquaculture occur? Regulations are needed for the tourist area to consider environmental issues.		Maintain dike regularly.	Waste water should be treated before being discharged to the sea. Water supply and drainage systems should be separated. Regulation on protection of shrimp raising areas and their surroundings.	Restrict pesticide use. This area is a priority area. It may not be possible to improve soil. Technology such as spraying irrigation, underground spring irrigation or saving waste water should be considered as the land is far from the water supply. The investment for tube irrigation is very high.	Restrict pesticide use. There is a high need for an irrigation project as well as drainage	Environmental regulations. New road costing 1.5 million VND. 800,000 of which will come from local people.

FOR THE AQUACULTURAL CANAL DIEN TRUNG COMMUNE, Group discussion, August, 2004

- Members:
 1. Ngo Lan- chairman of commune people's committee
 2. Nguyen Thi Ha- Chairman of women association
 3. Dau Ngoc Hoa- Chairman of farmer association
 4. Hoang Trung Thanh- chairman of veteran association
 5. Tran Van Can- Hamlet 9 leader
 6. Cao Thach- Hamlet 4 leader

Note:
 Bold line is capital process
 Other lines are project processes



**Summary of discussion on timing in the formulation and implementation of An Ngai Canal Construction Project
Dien Trung Commune**

February 2002	March 2002	15th March 2002	27th March 2002	July 2002
<ul style="list-style-type: none"> • Made a plan for canal construction with Dien Chau District DARD • A provincial budget is provided for four communes 	<ul style="list-style-type: none"> • Meeting with communities: 19/19 villages • Meeting with People's Councils 20/20 • Representatives of People's Council agreed • Communities approved. Discussion on the project cost (state budget of 30%, local contribution of 70%) 	<ul style="list-style-type: none"> • Design survey. • Rural Planning and Development Department of Nghe An + DARD appraise projects less than 1 billion VND + considered bidding criteria (by the Standing Committee) • Setup Project Management Board • Sign contract with implementation agency on 23/3/2002 (Director of Project Management Board signed - Chairman of People's Committee) 	<ul style="list-style-type: none"> • Implementation. • Project Monitoring Board (10 people) (1 Vice Chairman of People's Committee as Director, 1 Vice Chairman of People's Council, Vice President of Fatherland Front, 3 managers of 3 cooperatives, Secretary of Communist Party, village leaders) • Commissioner of traffic / communication committee will guide and monitor. 	<ul style="list-style-type: none"> • Check and handover the project between Party A & B • Calculation of the cost for the whole project: District's DOF appraised the calculation • Transfer the project to those villages that has the canal through them. Village leaders assign households to protect canal. • Collect contributions for O&M.

Summary of discussion on problems and difficulties faced in Dien Trung Commune

Participants:

Ho Thi Huan

Pham Phuong

Nguyen Thi Dung

Dao Thi Vang

Nguyen Thi Duoc

Problems, difficulties	Reason	Solution
<ul style="list-style-type: none"> • Flooding • An Ngai drainage system is built lower than rice field which reduces soil fertility • Lack of water for irrigation • Soil is saline and alum • Roads are low quality • People have had to resettle many times • The poor don't have capital • Lack of work • Many children • Lack of education • Many households have problems and poor health • Subsidies for officers are low 	<ul style="list-style-type: none"> • Land is lower than sea level • Low quality dike which doesn't prevent salinisation • Lack of irrigation system • An Ngai drainage canal was built with a faulty design • There was a policy to resettle residents near the sea to get more land for production • Fewer loans • Richer people are allowed to borrow bigger loans • Other trades are not developed • No money to pay for children schooling • Many rich households do not pay attention to their children's education • Working away from home makes people ill and many people die at a young age. 	<ul style="list-style-type: none"> • Mend the dike to prevent salinisation • Redesign An Ngai drainage canal • Building more irrigation systems • Credit for the poor borrowing money • Create more favourable conditions to develop subsidiary occupations • Develop aquaculture • Develop cattle and poultry raising • Build school • Pay attention to their children's education

Summary of discussion with Women's Union group Dien Trung Commune

Participants:

Pham Thi Tam

Pham Thi Huyen

Pham Thi Trang

Pham Thi Lan

Doan Thi Ai

Nguyen Thi Nhan

Nguyen Thi Ha

Main problems	Reasons	Solutions
<ul style="list-style-type: none"> • Agriculture depends on weather conditions 	<ul style="list-style-type: none"> • No irrigating system • The drainage system is not complete 	<ul style="list-style-type: none"> • Support from the government: • More suitable crop structure • Technical training • Better seeds
<ul style="list-style-type: none"> • Capital shortage • Short loan duration 		<ul style="list-style-type: none"> • Developing credit groups • Longer loan duration, low interest rate
<ul style="list-style-type: none"> • Shortage of jobs 		<ul style="list-style-type: none"> • Small scale jobs
<ul style="list-style-type: none"> • Family members are sick • Women are ill from exposure to chemicals. 	<ul style="list-style-type: none"> • Labour shortage • Costly treatment 	<ul style="list-style-type: none"> • Regular health checks for women • Labour protection
<ul style="list-style-type: none"> • Difficult to travel 	<ul style="list-style-type: none"> • There is no paved inter-village road. • Hard for children to travel to school • Hard to transport for trading 	<ul style="list-style-type: none"> • Financial and technical support.
<ul style="list-style-type: none"> • Many children 		
<ul style="list-style-type: none"> • Shortage of agriculture land 		

Summary of discussion on livelihood opportunities and constraints

Participants:

Ngo Dan
Dau Ngoc Hoa

Nguyen Thi Ha
Hoang Trung Thanh

Cao Van Thach
Tran Van Can

Livelihoods	Accessibility to the poorest	Income generation	Risk reduction	Impact on the environment
Migrating	Many poor people do (1)	Main income (1)	Diseases, accidents	
Growing peanut	Many poor people grow (2)	Major agricultural income (4)	Dependence on weather conditions	Not much, fertilise the soil
Raising cattle	The poor can raise if the they have capital	2-3 million VND/ year	Little risk (1)	Impact on the village hygiene
Growing corn	Many poor people grow (5)	Medium income	Little risk	Not much, use much inorganic fertilizer
Growing sweet potatoes	100% of poor households do (3)	Low income, for raising pigs	Little risk	No impact
Catching fish and small shrimp	Catch by themselves or work for others	Medium income	Little risk	Catch all small fish, use mines, discharge oil
Local labour	Only the poor do	Low income (10.000VND/day for peeling peanut)	Unstable (2)	
Growing sesame	Not many poor people do	Low income	Little risk	Little impact
Raising pigs and chickens	Many poor people do	Low income	Occasional diseases	Impact on sanitation
Trading agricultural products	No poor people do	High income	Little risk (3)	
Growing rice	100% of poor people grow (4)	Low income	Dependence on weather conditions	Spray pesticide, use chemical fertilizer, need much water
Tourism	No poor people do	High income (2)	Little risk	Waste
Growing mulberry and raising silk worm	Not many poor people do	Medium income	Little risk	Little impact
Collecting shellfish	Only the poor do	Low income	No risk (4)	Throw shell everywhere
Forestation	Not many poor people do	Low income	Little risk (4)	Prevent erosion, make air fresh
Growing poultry in large scale	No poor people do	Rather high income (5)	No risk so far	Poultry discharge
Small trading	Some poor people do	Low income	Little risk	Waste
Small industry	No poor people do	Rather high income	No risk (4)	Waste, dust, noise
Bamboo products	Many poor people do	Low income	Little risk	Little impact
Growing fruit trees	Not many poor people do	Low income	Little risk	
Aquaculture	No poor people do	High income (3)	High risk	Need much water, discharge waste water, and processing ponds with chemical substances
Growing other crops	Some poor people do	Low income	Rather high risk	Use pesticide and fertilizers harmful to health
Raising bees	Not many poor people do	Low income	Little risk	Pollinate
Producing salt	No poor people do	Very low income	Rather low risk	

Summary of discussion on livelihood impacts, Dien Trung Commune

Participants:

Ngo Dan

Nguyen Thi Ha

Cao Van Thach

Dau Ngoc Hoa

Hoang Trung Thanh

Tran Van Can

	Livelihoods	Priority factors for development
Impact on the poorest	<ul style="list-style-type: none"> • Migrating • Growing peanut • Growing sweet potatoes • Growing rice • Growing corn 	<ul style="list-style-type: none"> • School, upgrading knowledge, vocational training • Irrigation, technical training, market, seeds • Seeds • Irrigation, technical training, seeds • Seeds, technical training, irrigation
Risk reduction	<ul style="list-style-type: none"> • Raising cattle • Local labour • Trading agricultural products • Collecting shellfish • Small industry • Forestation 	<ul style="list-style-type: none"> • Seeds, vets, sanity sheds, capital availability • School, vocational training • Capital, market • Health • Tools, vocational training • Protection enhancement
Income generation	<ul style="list-style-type: none"> • Migrating • Tourism • • • Aquaculture • Raising poultry in large scale • Trading agricultural products 	<ul style="list-style-type: none"> • School, upgrading knowledge, vocational training • Vocational training , health, environmental protection regulations, infrastructure • Irrigation canals, technical training, waste water processing ponds, disease control, technique, capital • Capital, technique, vets • Capital, market
Mixed benefits	<ul style="list-style-type: none"> • Catching fish and tiny shrimp • Growing sesame • Raising pigs and chickens 	<ul style="list-style-type: none"> • Capital, health, tools • Capital, technique, vets

Detailed results of livelihood assessment in Dien Trung Commune

Participants:

Ngo Dan

Nguyen Thi Ha

Cao Van Thach

Dau Ngoc Hoa

Hoang Trung Thanh

Tran Van Can

Livelihood assessment					
Livelihood:	Mark	Order	Income generation	Risk reduction	Accessibility to the poorest
<i>Migrating</i>	23	1	8	6	9
<i>Raising cattle</i>	21	2	6	8	7
<i>Growing peanut</i>	21	2	7	5	9
<i>Growing corn</i>	19	3	5	6	8
<i>Growing sweet potatoes</i>	19	3	3	7	9
<i>Catching fish and tiny shrimp</i>	18	4	6	7	5
<i>Local labour</i>	17	5	2	8	7
<i>Raising pigs and chickens</i>	16	6	4	7	5
<i>Growing sesame</i>	16	6	6	3	7
<i>Agricultural product trading</i>	15	7	7	8	0
<i>Tourism</i>	15	7	8	7	0
<i>Growing rice</i>	15	7	4	2	9
<i>Large scale chicken raising</i>	14	8	7	7	0
<i>Small industry</i>	14	8	6	8	0
<i>Afforestation</i>	14	8	3	8	3
<i>Small trading</i>	14	8	4	7	3
<i>Growing mulberry and raising silk worms</i>	14	8	5	5	4
<i>Collecting shellfish</i>	14	8	2	8	4
<i>Bamboo products</i>	13	9	2	7	4
<i>Aquaculture</i>	11	10	8	3	0
<i>Growing fruit trees</i>	11	10	2	7	2
<i>Growing other crops</i>	11	10	2	4	5
<i>Raising bees</i>	10	11	2	6	2
<i>Salt production</i>	5	12	1	4	0
<i>Shellfish raising</i>					

