

Migration, Remittances, Livelihood Trajectories, and Social Resilience



We argue that all aspects of demographic change, including migration, impact on the social resilience of individuals and communities, as well as on the sustainability of the underlying resource base. Social resilience is the ability to cope with and adapt to environmental and social change mediated through appropriate institutions. We investigate one aspect of the relationship between demographic change, social resilience, and sustainable development in contemporary coastal Vietnam: the effects of migration and remittances on resource-dependent communities in population source areas. We find, using longitudinal data on livelihood sources, that emigration and remittances have offsetting effects on resilience within an evolving social and political context. Emigration is occurring concurrently with, not driving, the expansion of unsustainable coastal aquaculture. Increasing economic inequality also undermines social resilience. At the same time diversification and increasing income levels are beneficial for resilience.

INTRODUCTION

Migration has changed every corner of Vietnam in the past 50 years. At the same time, social upheaval, the effects of war, and political and economic transformation have altered the nature of social relations and environmental resources. Although demographic change is most striking in the uplands of Vietnam (1), the fertile coastal lowlands also have experienced significant changes. These demographic changes, allied to changing consumption and production patterns, bring about changes in environmental resource use. It is these outcomes, such as changing forest cover, intensification of agriculture, and overexploitation of renewable resources, that are commonly the focus of environmental research. But this research frequently occurs without an explicit link to the demographic changes that contribute to and shape the process of change. Thus, this study examines the links between migration and resource use, specifically the effects of emigration on natural resource use in a migrant-sending or source area.

As a means of conceptualizing the link between demographic change and the natural environment, we investigate the impli-

cations of migration for social resilience. We define resilience as the ability of communities to absorb external changes and stresses while maintaining the sustainability of their livelihoods. We recognize that degradation of the natural resource base will undermine social resilience.

MIGRATION, SOCIAL RESILIENCE, AND ENVIRONMENTAL OUTCOMES

Social resilience is the ability of a community to withstand external shocks and stresses without significant upheaval. Although the notion of community long has been problematic, resilience at this level can be conceived as made up of, or shaped by, the dynamic structures of livelihoods, access to resources, and social institutions. External shocks and stresses, including changes in government policy, civil strife, or environmental hazards, exert pressures on social structures, livelihoods, and resources (2). Here, we develop the concept of social resilience (3) as applied to communities dependent on natural resources (4).

In our view of social resilience, we engage with the recognition that communities are changing constantly, and focus on their capacity to deal with external shocks. When communities are resilient—with a resilient and accessible resource base and a dynamic range of viable livelihoods and responsive institutions—they may be able to absorb these shocks, and even respond positively to them. However, when communities are less resilient—perhaps because their resource base is fragile or inaccessible, their set of livelihoods are insecure, or their community institutions are rigid—or when external changes are rapid and far reaching, significant upheaval may occur. This potentially leads to the disintegration of social capital, the erosion of resources, and the absence of viable livelihood options.

The social resilience of a community must be seen within the context of the wider political economy. Many social trends act to reinforce existing inequalities, and some types of social capital are exclusionary in nature (5, 6). Shocks may increase the vulnerability of some individuals and households, whilst also providing potential opportunities for individual and household advancement. Chronic stress may force needed renovation in a community. Natural resource allocations and changing uses have, by their nature, sets of winners and losers. The capacity of a community and of its component parts to adapt and respond to

change—its capacity to mobilise new resources, access new opportunities, and influence higher level processes—is influenced strongly by its location within the broader sociopolitical context.

Migration has diverse social, economic, and demographic consequences and effects on social resilience by, *inter alia*, altering economic well-being, changing the structure of the community, and affecting the natural resource base. The relevant implications of migration for social resilience and environmental health are expanded on in Figure 1.

Migration affects the income, wealth, knowledge base, and labor supply of both sending and receiving areas. Migration also affects the use of natural resources, availability of technology, and characteristics of resource extraction.

One way in which migration affects resource use in places of migrant origination is through the use of remittances, generally gifts and income, from migrants to the communities of origin (7–9). The effects of migration on economies and societies are complex. On one hand, remittance income can increase or maintain social stability and economic well-being. Particularly in agricultural economies, evidence suggests that remittance flows are invested in human or physical capital to enhance household production. On the other hand, many economies have been depicted as using remittance income in unproductive ways, particularly through changes in consumption patterns (10). Both investment in physical capital (e.g. increasing intensity of agricultural resource use) and increased consumption also have environmental implications, and these rarely are appreciated by migration scholars.

Remittance dependence traditionally has been portrayed as a negative process in the sending areas—increasing dependence on labor exports represents a loss of labor and capital in these areas. Under such scenarios, dependent regions or countries are chronically disadvantaged (11, 12). Revisions to this view present a more dynamic understanding of remittances, arguing that migration decisions often are part of family strategies to raise income, spread risk, provide capital for investment, and loosen constraints in these sending areas (10, 13). Migration and remittances provide flexibility in livelihood options, and returning migrants enrich the stocks of human, social, and cultural capital of origin communities, bringing with them links to trans-national networks.

In migrant sending areas, the various effects of remittance income can offset one another. Investment in agricultural intensification and conservation of productive resources, such as land or human capital, clearly represents a net benefit as far as environmental resources are concerned. However, investment in unsustainable resource use or technology represents a loss. There is sparse empirical evidence for the effects of remittances in either direction. Investigations of the use of remittance flows largely focus either on the negative social effects of remittances in dependent societies (the traditional ‘dependence’ view), or the positive effects on broader development objectives (e.g. the ‘new economics of labor migration’ view). There are a number of important indirect effects of remittance incomes that point toward their likely environmental implications in any given situation. Examples include the relative mix of consumption *versus* investment, priorities placed on physical and human capital, and the effects of remittances on income and wealth inequality.

Households receiving remittance income may increase consumption or invest in capital, depending on the relative scarcity of either category within the expected return to the household economy. These decisions must be seen as part of wider resilience and livelihood strategies and a broader context of, for example, kinship and reciprocity as part of informal insurance and networking processes (14). These broader implications often are not adequately understood because of methodological impediments within migration research (13). Remittance flows usually are not earmarked for specific purposes; they are ‘fungible’ and may displace other expenditures as well as having indirect effects on other households and enterprises. Thus, their direct and indirect effects are difficult to quantify.

A second issue relates remittance flows to their effects on the distribution of income and asset accumulation, and thence indirect feedbacks on resource use. Again, the effects of migration and remittances in this sphere remains an empirical question with little evidence. The most important findings from diverse studies (13) show patterns consistent with motivations for migration. Migrants from relatively wealthy families, other things being equal, remit to a greater level than migrants from less wealthy families, perhaps motivated, in part, by their own inheritance (15). But other incentives for higher remittances include alleviating risk, and variability in livelihoods in the households re-

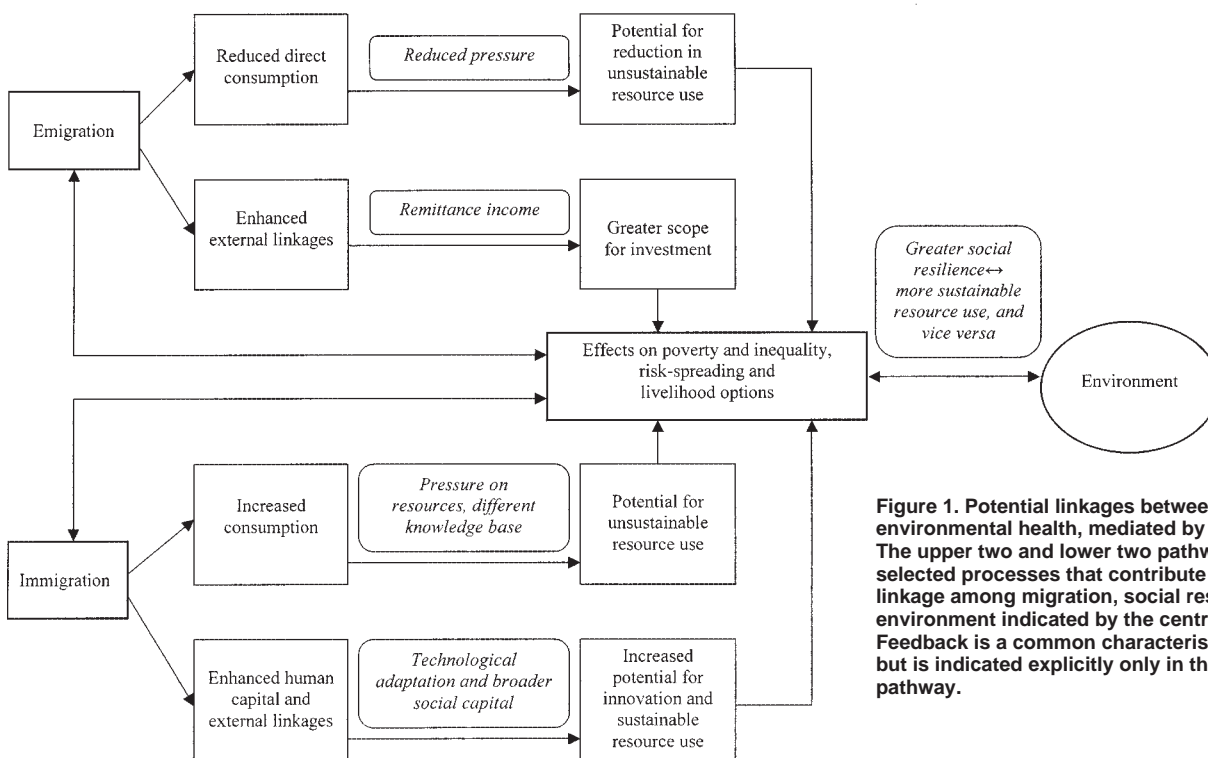


Figure 1. Potential linkages between migration and environmental health, mediated by social resilience. The upper two and lower two pathways illustrate selected processes that contribute to the overarching linkage among migration, social resilience, and the environment indicated by the central pathway. Feedback is a common characteristic of the system, but is indicated explicitly only in the case of the central pathway.

maining in the sending areas. If the former observation is more prevalent, then remittances are likely to exacerbate income and asset inequality (16).

What then are the indirect effects of inequality on resource use and the state of the environment? The model developed in Figure 1, and discussed by Locke and colleagues (4), proposes that income inequality can be detrimental in two ways. First, uneven distribution of income and technology leads to differential access and entitlements to scarce environmental resources, and can result in both the undermining of collective action institutions and negative spillovers into the overexploitation of open-access resources. The circumstances in which this occurs have been discussed in a number of studies (17–20). Second, uneven income distribution and rising inequality, in the absence of evolving institutional arrangements, exacerbate the vulnerability to external shocks of the marginalized and those who have failed to benefit from rising incomes. They often do not have the resources for coping with the damages from natural hazards, other risks, and potential downturns (21).

In line with perspectives that perceive migration as part of a wider political economy in which migrants and their places of origin are “bound together by beneficial informal contracts, including agreements to provide reciprocal insurance” (13), we argue that remittance income can affect the overall sustainability of resource use and hence put pressure on the environment of the migrant sending areas. To investigate this process, two mechanisms have to be considered. The first concerns the direct effects of remittance income on social structure, asset distribution, and levels of income inequality. The second concerns the effects of remittance income on the sustainability of the resource base.

EXPANDING MOBILITY AND MIGRATION IN CONTEMPORARY VIETNAM

We now consider the theoretical and conceptual issues discussed previously in the context of lowland coastal Vietnam, where migration and remittances are becoming increasingly important in contemporary society. Vietnam has experienced rapid increases in population mobility from the 1980s to the present, particularly since the process of reform and economic renovation known as *doi moi* was initiated and controls on population movement relaxed. Despite fertility rates that are higher in rural than in urban areas, and official policies discouraging rural-urban movements up until the mid-1980s, a much more marked population growth rate was recorded in urban than in rural areas in the 1980s (22). This indicates significant unofficial rural-urban migration well before the formal introduction of reforms. The trend has accelerated since the late 1980s, with increasing demand for labor in urban areas. Meanwhile, the allocation of agricultural land to households as part of the reform process has provided considerable incentives for rural labor, leading, it has been argued, to significantly improved agricultural productivity and increased aspirations and expectations (23, 24). Rural migration from more highly populated areas to ‘frontier’ regions, often in the uplands, also has been characteristic of the period, with the balance shifting from planned to spontaneous migration. The result has been considerable spatial and temporal variation, not to mention increasing complexity, in Vietnam’s migratory experiences during the present reform era (22).

In general, the *doi moi* period has been marked by increased spontaneous migration from rural to both rural and urban destinations. According to recent studies, institutional changes surrounding decollectivization, land tenure, and household registration regulations have been particularly significant in shaping the shifting patterns of population mobility (1, 25, 26). There is no doubt that decollectivization and the introduction of the household contract system in the countryside from the early to



Rural livelihoods, migration and resilience are dependent on the technologies for mobility and environmental transformation. Bicycles at rest, Giao Thuy District, Vietnam. Photo: Luong Quang Huy.

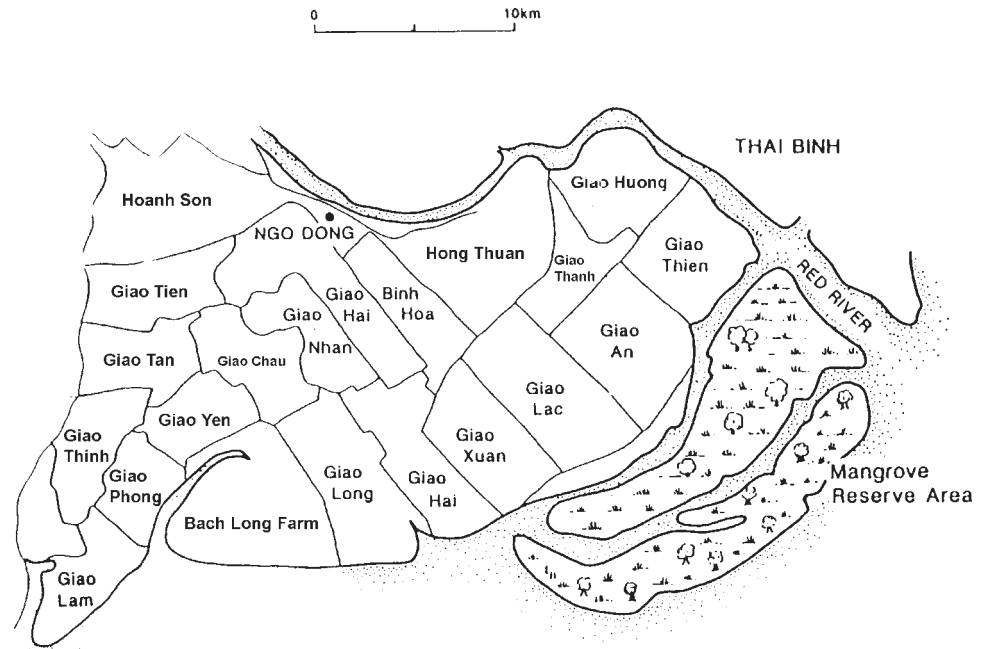
mid 1980s, associated with improved agricultural production, have played a critical role (27). Since the 1980s, differentials in rural-urban economic opportunities increased in some areas, and the welfare ‘safety net’ in rural areas was diminished. The 1993 Land Law and rights to transfer, exchange, mortgage, lease, and inherit land paved the way for a land market, and hence increased mobility and flexibility. The erosion of the household registration regime in the cities, through weakened state control over rural-urban population movements, made it possible for rural residents to stay, survive, and find employment in the city. The shift from restrictions on to encouragement of a non-state sector, including production, trade, and commerce as well as services, has created numerous new employment opportunities in the informal sector.

The increasingly integrating role of the non-state market has helped to link rural-urban and delta-frontier areas more closely, making people more aware of the new opportunities across space and administrative boundaries. The operation of these factors has interwoven with political changes, including a gradual shift in the function of the state (e.g. planning by administrative fiat in the command economy toward co-ordination and regulation of the market) on the one hand, and the state’s continued interventions in population mobility on the other. All these have worked together in a complex fashion to change the landscape of population movement in contemporary Vietnam, and provide the policy context in which migration and remittance income affect rural resource use and its sustainability. Both lowland to upland and seasonal and cyclical lowland migration have significant resource and environmental effects. These are best documented for the uplands in terms of change in forest cover, but are less well documented for lowland areas (28).

COLLECTING DATA ON MIGRATION AND LIVELIHOODS: THE GIAO THUY CASE STUDY

This study concentrates on the effects of net emigration and remittance flows on a coastal lowland migrant sending area in terms of livelihood trajectories, income inequality, and the pre-conditions for coastal resource use. These issues are investigated through data collected for one district in coastal northern Vietnam, showing the dynamic nature of the processes outlined above within livelihood trajectories of individual households. The research strategy covers long-term investigation of both migrant sending and receiving areas and the effects of remittances, social capital, and the evolution of ecological knowledge in these

Figure 2. Giao Thuy District, Nam Dinh Province, Vietnam.



areas on the health of the natural environment and levels of social resilience. Here, we focus on one aspect of our on-going research: the previously neglected issue of the sustainability of resource use associated with migrant sending areas. Data from household surveys undertaken in Giao Thuy District in Nam Dinh Province in 1995 and 2000 are used to examine changes in income distribution over time and, in particular, the role of remittances.

Giao Thuy District is located in the coastal zone of the Red River Delta Provinces of lowland northern Vietnam, and covers an area of 16 300 ha (See map p. 358 and Fig. 2). It is bordered by the Ba Lat estuary (the largest estuary of the Red River Basin) to the north, the Eastern Sea and Hai Hau District to the south, and Xuan Truong District (part of the former Xuan Thuy District) to the west. The history of Giao Thuy goes back to the 15th century, when the land was reclaimed for agriculture after the building of the Hong Duc dyke and subsequent changes on coastal morphology. The reported mean annual income is high compared to national averages (29). Nam Dinh Province is characterized by the highest population density found in rural Vietnam with around 800 people km⁻² and a highly skewed age distribution (more than 50% of the population is under 25 years of age), putting increasing demand on the labor market and local natural resources (30, 31).

According to district archival data, the population of Giao Thuy was 198 000 in the year 2000, with 47 000 households. The population growth rate at that time was 1.47%. The total number of laborers in the district, following the definition used in the archives, was about 104 000, with 3000 to 4000 unemployed. Around 20 000 people, one-fifth of the labor force, migrate seasonally, mostly to Hanoi and other local urban centers, but around 6000 work seasonally in the south of Vietnam assisting relatives. During the 1990s, 300 to 400 people a year left the district permanently, most for the Central Highlands.

Giao Thuy District contains the first wetland area protected for nature conservation in Vietnam under the Ramsar Convention. It is formed by the Ngan, Lu, and Mo islands, and has an area of 12 000 ha. The Ba Lat estuarine area has a large volume of silt, and is richly nutritional. The broad mudflats contain massive biological resources, especially the Ngan and Lu islands with their broad mangrove forests that are the habitat and alighting place for migrant waterfowl. There are 64 phytoplankton species, 34 plant species, 163 zooplankton, 136 species of benthos, 55 species of fish, and 200 species of birds in this area. Giao Thuy district has natural and replanted mangrove of more than

7000 ha, mostly concentrated in the northern part of the Ramsar protected area.

The fertile alluvial deposits in the delta lend themselves to wet-rice agriculture, upon which most of the livelihoods in this region are based. Central planning of agriculture and other resource allocations has been the dominant form of organization during the most recent two decades, but with increasing migration and trade linkages to the regional economy in the past decade (32). Trading activities, of which the main products are foodstuff, food grain, agricultural, aquacultural, and breeding materials, account for a considerable part of the GDP of the district.

Giao Thuy is subject to pressures common to coastal zones worldwide: degradation of aspects of soil quality and biodiversity, decline in the yield of marine products, and changes in other aspects of environmental quality. In recent years, the main source of environmental change in Giao Thuy District, as well as many other coastal regions in Vietnam, has been the development of shrimp farming which, throughout the 1990s, has led to the progressive clearance of mangroves (33). In general, aquaculture has detrimental environmental consequences on local ecosystem services and ecosystem integrity. This is particularly the case for shrimp aquaculture, which has proven harmful to local habitats, potentially disrupts local wild fish stocks used for feed, and introduces exotic species into local marine systems (34–36).

According to archival statistics, there now are nearly 3000 ha of shrimp ponds in the district, mostly farmed on an extensive or advanced extensive basis. The expansion of aquaculture has caused enhanced flood risk due to the loss of the buffering effect of the mangrove trees and other ecosystem services, and has undermined the availability of resources for extraction by poorer sections of the population (37). Conversely, conservation and replanting have been shown to be an appropriate response to coastal storms, providing local economic benefits as well as increased protection (38).

The survey in April–May of 1995 involved 308 individuals in 60 households in 11 communes in Giao Thuy District, while a slightly smaller subset, 229 individuals in 46 households in 10 communes, makes up the panel data across the two time periods. The data collection was based on a stratified area sample with representativeness ensured through randomized selection within the sample frame, usually drawn using commune census and family-planning records. The second survey took place in March 2000. A change in administrative boundaries resulted in the selection of only 46 households in common with the sample



Enclosure of mangrove forests for extensive aquaculture in Giao Thuy District, Nam Dinh Province, northern Vietnam.
Photo: Luong Quang Huy.



New shrimp ponds are being extended in Giao Thuy, but the sustainability of shrimp farming is in question in the long run.
Photo: Luong Quang Huy.

from 1995. Other than restricting the sample size, the boundary changes had no effect on the longitudinal data. As with all longitudinal surveys, the implication cannot be avoided that the survey is biased toward the stable households that are not 'reconstituted' and maintain their own existence over time.

What then are the other problems of longitudinal data collection (39)? First, besides the possibility of significant observational error as the research team evolves over time, the data may well be subject to large-scale fluctuations in environmental, weather, and market conditions that affect rice yields and other major income sources. This can be overcome in more abundant panel data by taking running averages of the important parameters, but this is not an option for the present two-time period dataset. The second factor is in the comparability of the economic data over time. The data in this case are adjusted to 1995 values using a consumer price index estimated at the national level (40). As a measure of economic growth in the local agriculturally-based economy, however, an index of farm-gate price of rice may be a more appropriate deflator. Deflators for the national economy reflect the structure of imports, exports, and real exchange rates, factors largely outside the local-trading economy in rural areas. Real growth rates in income over time may then be lower than indicated using the available consumer price index deflators, since the economy of Giao Thuy is based on an

agricultural system that has not grown at the rate of the national economy. This discrepancy is reducing over time, given the increasing integration of the Giao Thuy economy at the regional level, a process partly facilitated by migration. Though the data and its subsequent analysis carry these *caveats*, we consider that the estimates of change in income over time, and particularly of income distribution within the time periods, are reasonably robust.

Intra-household equality is assumed in the analysis. The income of individuals is calculated by attributing to each individual the *per capita* income of their household, using estimates from the 229 individuals in the panel sample. This assumes that income is distributed evenly within the household irrespective of age or sex. A household survey can be analyzed as a set of individuals, by treating children, or all nonworking-age dependents, as a weighted proportion of adults for income or varying income generally by age and sex to reflect the true distribution.

Finally, we argue that the diversity of livelihoods and household remittances justifies examination of the household as an extended concept. Livelihoods incorporate income and consumption decisions but also social entitlements and rights, which go, in total, to make up the 'standard of living.' Entitlement relations are dependent on particular members of the household at various times, but the household in general can be conceptualized as investing in these social relations to the point at which marginal returns are less than for investment in other capital. The second extension of the household model requires the incorporation of migration and remittances within household livelihoods.

PATTERNS OF MIGRATION AND THEIR EFFECTS

The survey data, along with observations and interviews of key informants in Giao Thuy, point to a picture of rising incomes and well-being, changing livelihoods, increasing income inequality, and an intensification of resource use in coastal aquaculture by an exclusive subset of the Giao Thuy population during the late 1990s. These are all profound changes. What role has migration, and, in particular, remittance income, played in the context of these trends? To answer this question, we begin by considering trends in income distribution and then focus on remittance use.

Quantitative measures of income distribution used in this study start from the base of GDP *per capita*. They include equality indices such as Gini coefficients that show the extent to which the actual distribution of income differs from a hypothetical uniform distribution in which each person or household receives an identical share (41). Income inequality in Giao Thuy District increased between 1995 and 2000, as shown in the cumulative frequency Lorenz curves in Figure 3. (The greater the distance of the cumulative frequency curve from the 45° line, the greater the income inequality in the community). This rising inequality is in itself dramatic in such a short time period, but it also is associated with a doubling of real mean income across the district in the same period, as illustrated in Figure 4. Thus, this lowland coastal region apparently is benefiting from liberalization almost as much as the urban growth poles of Hanoi-Haiphong and Ho Chi Minh City (42, 43), thereby dampening the rural-urban differential and 'lure of the cities' for immediate economic gain—at least as far as the community as a whole is concerned.

The Gini coefficient is defined as the ratio of the area between the Lorenz curve shown in Figure 3 and the diagonal of equality to the total area between the diagonal of equality and the horizontal axis. Although the income distribution in this district, with an overall Gini (*G*) of 0.43, was more unequal than the country's average income, $G = 0.36$, in the mid-1990s (44), it has risen to a level, $G = 0.60$, consistent with advanced capitalist economies, despite having a land and wealth distribution more consistent with former socialist countries. This high level of in-

come inequality could be explained by the influence of off-farm diversification, in which these sources are accessible only by a proportion of society. To resolve this, the data are decomposed to show the relative importance of income sources, including remittances, on overall livelihoods.

First, the importance of income sources across time is illustrated in Figure 5. In a period when incomes were doubling, the share of agriculture in overall income declined from 64% to 30%. Within the agricultural sector, higher value cash crops were introduced such that rice fell from 30% to 13% of overall income between 1995 and 2000. Equally dramatically, the redirection of labor into nonfarm enterprises and into migration led to an increase of income from these two sources, from 11% to 45% of overall income. Among households receiving remittance income, the rate of remittances grew over time, indicating that the life-cycle of migrants and other possible external factors such as increased economic opportunities are important in their remittance behavior. Further, there is some evidence that migration initially was limited to richer households as the high transactions (for example, of obtaining permission or licenses to move) acted as a barrier. Under removal of household registration this cost is reducing, so there now is wider participation in migration activities.

Evidence from the 1995 survey suggests that the combined income from wages, business, and remittances was contributing to inequality at that time (44). This is demonstrated in Table 1,

Figure 4. The evolution of income and inequality in Giao Thuy District, 1990–2000.

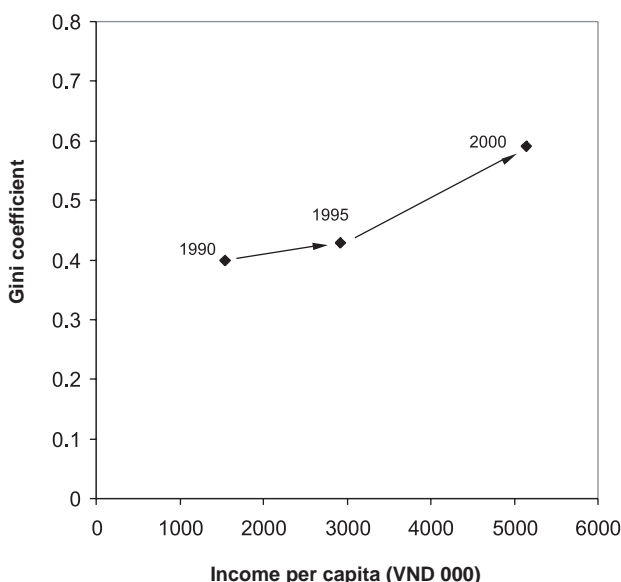


Figure 3. Lorenz curves of individual income for Giao Thuy District, 1995 and 2000.

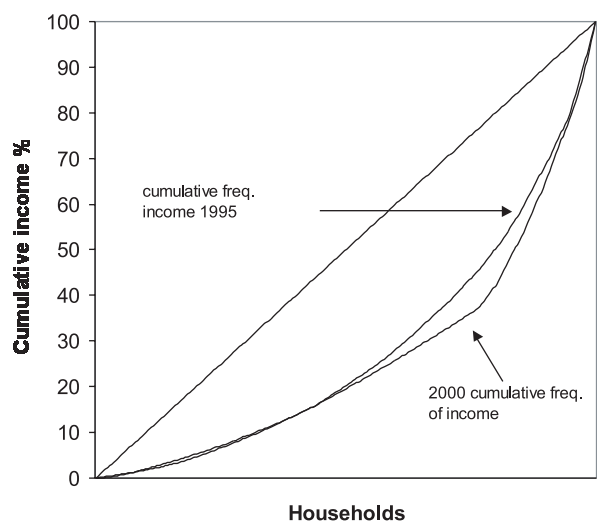


Figure 5. Reduced reliance on agriculture and increases in wages, remittances, and aquaculture, Giao Thuy, 1995–2000.

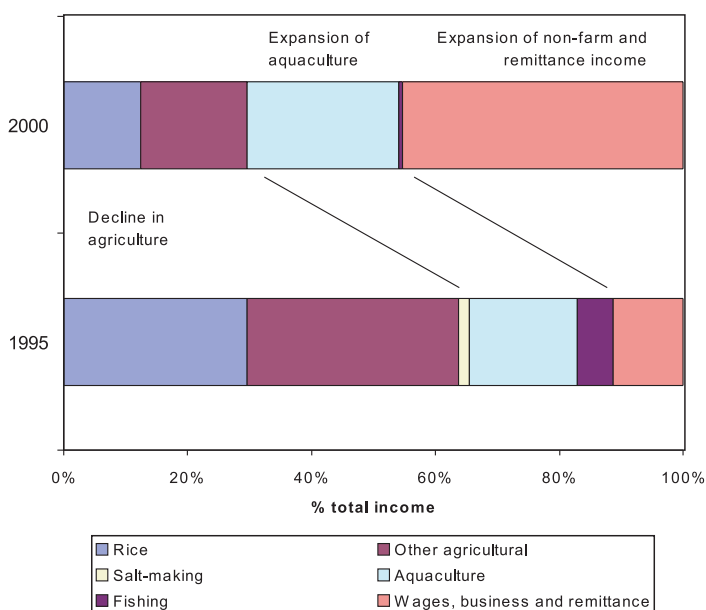


Table 1. Decomposition of per capita income inequality by components of income for Giao Thuy District, 1995 and 2000. (Source: Giao Thuy field surveys).

	1995				2000			
	Gini/pseudo Gini	Share of income %	Contribution to inequality %	Inequality effect	Gini/pseudo Gini	Share of income %	Contribution to inequality %	Inequality effect
<i>Giao Thuy</i>								
Overall income	0.429				0.592			
Farming income	0.420	63.8	62.6	–	0.288	24.5	13.8	–
Aquaculture income	0.592	17.4	24.1	+	0.755	28.7	35.6	+
Fishing income	0.331	5.8	4.5	–	–0.358	0.2	–0.1	–
Salt-making	–0.540	1.7	–2.1	–	n/a	0	n/a	
Wages, business, and remittances (1995)	0.415	11.3	11.0	–				
Wages and business (2000)					0.668	33.5	37.8	+
Remittances (2000)					0.771	9.2	11.9	+

in which the inequality contributions of each of five categories of income are decomposed. Gini coefficients are estimated for each income source, and contribution to total inequality is compared to the contribution to total income. The analysis of the contribution of income sources is carried out by decomposing Gini coefficients as the weighted average of the pseudo-Gini coefficients for each of the components of total income.

Table 1 shows the importance of each income source and whether it is contributing more or less to inequality than to its share of income (its 'inequalizing effect'). The major determinant of inequality in 1995 was aquaculture; shrimp farming and the extraction of other marine products, i.e. fishing. Becoming a legal activity in this district in 1989, shrimp farming flourished through the early 1990s, despite high investment demands, until a major storm in 1992 wiped out the income of a number of small producers and the ponds were consolidated into a smaller number of large owners. Since there are high returns to aquaculture, this source contributes more to inequality than to income share, and hence it has this 'inequalising effect' (indicated by '+' in Table 1). Throughout the 1990s, subsistence users of the mangrove resources were being excluded from their use as the mangrove areas became increasingly 'enclosed' behind dikes in the pursuit of shrimp farming. Thus, the evolution of shrimp farming further reinforced the trend toward increasing inequality. Fishing, in contrast, requires less investment than shrimp farming and hence remains open to a larger proportion of the population, though again biased toward the richer members of the community. Capture fishing is not prone to the ecological problems of shrimp farming (45), though overfishing does, of course, pose a threat.

Table 1 also shows the contribution wages, business, and remittance income have to inequality. For 1995, wages, enterprises, and remittances are taken together and contribute only 11% to total income. By 2000, enterprises and wages represent one-third of total income, with all of the increase in the intervening period being in new 'off-farm' enterprises. Remittances now form 9% of total income for the sample. By 2000, aquaculture, wages, new enterprises, and remittances all were having an 'inequalizing effect' in Giao Thuy (46) and driving total inequality to higher levels than previously experienced, despite the relatively equitable land distribution.

The patterns of migration from the sample survey and from secondary data in Giao Thuy are summarized in Table 2. This shows two distinct groups of migrants, with very different profiles and potential effects on resource use. The migrants with rural destinations are moving greater distances to the central and southern highland frontier provinces, often to undertake forestry, land clearing for coffee production, or other resource extraction activities. Many of these migrants may be considered long term rather than permanent, given that they are able to keep land titles in their area of origin. Furthermore, they tend to send remittances only after the initial establishment years of their wage labor or new enterprises in farming. Since large-scale opportunities to migrate to frontier areas are only recent, these migrants tend not to be sufficiently established to be contributing substantially to any remaining family in Giao Thuy. There is anecdotal evidence that the permanent migrants to highland regions have managed only to maintain a low level of income, and hence are likely never to be a significant remittance resource for the source area. In contrast, migrants to urban centers such as Hanoi and Nam Dinh often are involved in specific clusters of enterprises in these cities, making use of established networks, and return themselves and send back remittance flows to the home area. As noted earlier, a significant number of seasonal migrants also travel south to assist family members who have moved on a longer-term basis.

The effects of migrants in the areas that receive them is clearly important. The effects of frontier expansion include forest cover

loss associated with agriculture, displacement of ethnic minorities, and the opening up of areas for resource extraction. The resulting effects on timber, wildlife trade, and other issues have been well documented (28). These effects, of lowland to highland migration, as well as the positive role of migrants in building social and human capital in frontier regions, are the subject of subsequent work. But this analysis concentrates on the effects in the sending area. Having defined the effect of remittance income on income distribution, we now consider the productiveness of the investment of remittance income, paying particular attention to implications for social resilience and environmental health.

In the case of Giao Thuy District, the use of remittance income is summarized in Table 3, based on the stated preferences of survey respondents. This ranked ordering, derived from the most important investments of past remittance flows, shows education as the highest priority, followed by increased consumption and then by investment in agriculture, (livestock in particular), and aquaculture (shrimp farming and fishing). The effects on the sustainability of livelihoods also are summarized in Table 3, on the basis of the classification of income sources by human, physical, financial, and natural capital. Thus, education represents investment in human capital, whereas savings and businesses add to financial capital. From these results on remittance flows we cannot postulate that investments in health and education are somehow indirect contributions to agricultural intensifications. Investment of remittances in education may well, however, be an investment indirectly into accessing non-farm income, and both are indicative of nonlocal income making important contributions to livelihoods based at least temporarily in the local area.

What is the net effect on social resilience? Inevitably, the consequences are mixed. The evidence is not that remittances are driving shrimp farming. Although we believe this could be an important direct environmental effect of remittance income, it is not in our case study area. In this case shrimp farming has increased, and remittances have increased, but our data shows that the latter is not driving the former. Investment in education

Table 2. Characteristics of rural and urban migration from Giao Thuy District. (Source: Giao Thuy field surveys).

Migration type	Characteristics
Rural – urban	To Hanoi and regional centers Cyclical, often seasonal Involves remittances Specific occupation activities
Rural – rural	To Vietnam highlands May be long-term or seasonal No remittances Frontier activities (forest clearance, coffee, etc.)

Table 3. Ranked perceived importance of remittance expenditure and contribution to capital assets. (Source: Giao Thuy field surveys).

Rank	Use of remittance income	Effects on potential for sustainable livelihood, expressed in different forms of capital
1	Education	Human
2	Food and consumer goods	Nonproductive (though may contribute to social capital)
3	Livestock, agriculture, and aquaculture	Physical and natural (negative)
4	Construction/infrastructure	Physical
5	Health care	Human
6	Savings	Financial
7	Businesses	Financial

and health care undoubtedly can be classified as positive, and likely to enhance resilience. Increased consumption, although stimulating the local economy, often is classified as a nonproductive use of resources. It should be noted, however, that consumption of food in rituals and other communal activities is an important part of remittance flows in Vietnamese society and can, in effect, represent an investment in social capital (47).

Most important are the investments in livestock, agriculture, and aquaculture. These represent investments in physical capital, but, in the case of aquaculture, this is at the expense of natural capital. It should be noted, though, that the use of remittance income is skewed toward livestock and agriculture, with a relatively small percentage devoted to shrimp farming, and somewhat more to fishing, in this sample. Investment in the intensification of agriculture, as stated above, has been primarily in diversification from rice to other cash crops. In general terms, remittance income can improve social resilience to the extent that it promotes diversification and risk-spreading, enhances social capital, and extends opportunities for improving well-being, although negative effects on resilience also may occur.

These negative effects on resilience are not evident from the data reported here, but may be latent in the social changes associated with the changing economic structures. As discussed in the section above, rising income inequality and uneven development is being experienced throughout rural Vietnam, although with diverse trajectories (48). If a newly-marginalized social group is being created in such rural differentiation, its ability to cope with future demographic and environmental stresses may be undermined. Further qualitative longitudinal data on social differentiation potentially would throw light on negative aspects of changes in resilience.

Effects on natural resource use and the local environment may accrue from any use of remittance income. The most obvious adverse effects on the coastal environment would result from any reinforcement of the expansion of aquaculture. Investment in education ranks highest, and demonstrates that human capital is an important component of sustainable livelihoods. To the extent that it reduces pressure on threatened coastal resources such as the mangrove, investment in business and new enterprises could be considered largely beneficial. In general, though, the environmental consequences of remittance investment are difficult to predict without consideration of the wide range of factors surrounding the investment process. For similar reasons, it is not productive to attempt to define the overall effect of remittance income on the state of the environment. The value of this kind of analysis lies in highlighting the scope for policy intervention in reinforcing positive trends and offsetting negative developments by, for example, regulating investment (49). In general, labor market liberalization and population mobility are likely to be beneficial to social and economic development in Vietnam. The environmental problems created by both remittances for population source areas and of frontier expansion, however, require innovative solutions and greater understanding.

CONCLUSIONS

We have presented a conceptual framework within which to understand how migration is central to the relationship among demographic change, resource use, and environmental health. The value of this framework has been examined using household level data for a resource-dependent coastal region in northern Vietnam. The trends in this region are coming about as a result of wider demographic and political change. While there is some evidence that the institutions of kinship, civil society, and social capital have been strengthened in the 1990s as social security nets associated with collectivized structures have been eroded, the net effects of policy changes, it can be argued, are toward reduced social cohesion (50). The land allocation proc-

ess, for example, has resulted in winners and losers, differentiated particularly in the highlands by ethnic group, gender, and access to power (51, 52). Marginalized social groups have great difficulty adjusting to these new 'rules of the game' in contemporary Vietnam (53, 54) and, as we have demonstrated, the opening up of new enterprises such as aquaculture often reinforces the processes of marginalization.

In this increasingly deregulated and mobile social environment, the receipt of remittances, is, to some extent, offsetting adverse trends in social resilience. Remittances, it appears from survey and other secondary data, can enhance resilience through risk spreading and the broadening of opportunities for real changes in well-being, with income invested in human and physical capital. At the same time, however, remittance income also may increase economic inequality among the households in this community, limiting access to resources amongst the poorer members of the community and further eroding social resilience. Reduced social resilience implies a greater risk of unsustainable exploitation of natural resources and environmental degradation. There also is a risk of direct effects on the environment if remittance income is, for example, invested in unsustainable practices such as shrimp farming, although this does not seem to be a major use of remittances in the study area.

Migration, particularly domestic migration, is an important component of demographic transition often overlooked in population-environment debates. This study points to the significance of migration effects on social resilience and the natural environment in both sending and receiving areas, and shows that these effects can be positive or negative. Enhancing social resilience and promoting sustainable resource use is an important policy goal, particularly for societies increasingly open to the uncertainties of globalization and environmental change (50). The complex implications of migration and broader demographic change must be unravelled if effective measures are to be deployed.

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