

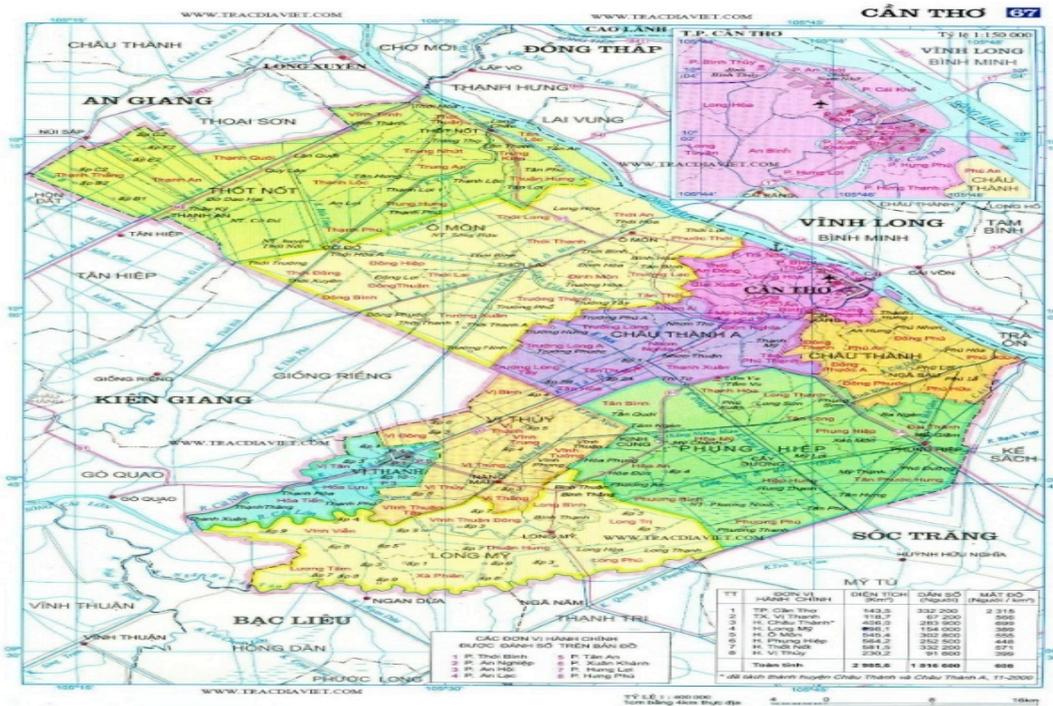
Vietnam Key Findings

Characteristics of Surveyed Site

Vietnam's Mekong Delta is the downstream region of the Mekong River, which is contiguous to the East Sea. The region is facing simultaneous impacts from flooding of the Mekong River and rising sea levels on this region. This dual effect increases flooding, saltwater intrusion, and environmental change. Many hydropower projects, construction and agricultural production upstream have been continuing to change the water flow, and along with high tides combined with monsoon these factors are leading to a change of the flood regime, flood stage, and the starting time and the level of continuous duration in the rainy season, as well as increasing drought and saltwater intrusion in the dry season.

Thanh An commune, Vinh Thanh district, Can Tho city, which is adjacent to An Giang and Kien Giang provinces and belongs to the Long Xuyen quadrangle region, is an area affected directly by the annual flood scheme of the Mekong River. Although it is not influenced directly by sea level rise, the groundwater resources in this area are regularly contaminated with salinity, followed by water discharge from Kien Giang province. At the peak of the dry season in recent years the river water contaminated with salinity has penetrated further inland, about 5-10 km towards the studied area. Therefore, this is one area that is highly sensitive to environmental change in the context of the current climate change.

Figure 10: Location of the study site in Can Tho city



Source: <http://www.google.com.vn/imgres?imgurl=http://www.quangnamtourism.com.vn/vn/images/can-thomap.jpg&imgrefurl>

Figure 11: Location of the survey site, Thanh An Commune, Vinh Thanh District



Source: <http://www.gis.downappz.com/vn/can-tho/vinh-thanh/thanh-an.html>

Thanh An commune of Vinh Thanh district, Can Tho city, is located about 13 kilometers away from the district center and is adjacent to An Giang province. The commune has flat terrain with elevations from 0.95 to 1.2 meters and a system of interlaced rivers and canals evenly distributed throughout. Annually, the commune is affected by the flood and tide scheme of the Hau River, one of the two major branches of the Mekong River running through the Mekong Delta of Vietnam. In flooding season, the overflowing water carries fertile alluvium to rice paddies,

removes alum, and also provides abundant aquatic products. When the floodwater recedes, the canals and waterways play an important role in leading water to irrigate rice fields of the whole commune. Groundwater contaminated with heavy metals and salinity does not guarantee water quality for serving the residents' needs. The climate is quite humid with tropical monsoon, and fairly temperate with two distinct seasons. The rain season from July to November, corresponding to the South-West monsoon. The dry season is often from December to April of the following year, corresponding to Southeast monsoon. The total average rainfall is 2,000 mm³ per year. The average evaporation is 1,160 mm³ per year. The average wind speed is 1.8 meters per second. The annual average temperature is 28°C. The average humidity is 70%. This is an area with a weak geological foundation and the load capacity of the natural ground is only 0.3 kg/cm²-0.5kg/cm². Thanh An commune is located in an area less affected by storms and strong whirling winds, but much influenced by flooding from the Mekong River.¹⁰²

The whole commune is 4,488.69 ha, of which the agricultural production land is 3,888.9 ha, residential land is 141ha, fruit orchard land is 75.08 ha and aquacultural land is 51.33 ha. According to the results of the population census on 1 April 2009, Thanh An has 12 villages with 1,996 households and 8,505 people, of which males made up 4,324. The number of employees is 4,860 people constituting 45% of the total population. The percentage of working-age labor force in the agricultural sector 35.58%, with 3,840 persons.¹⁰³ (In 2012, the commune had 2,330 households with 10,742 people, including 101 poor households.¹⁰⁴ The commune is composed of 12 hamlets located on canals parallel to each other, crossing the river in the middle. Local residents are settled down along both sides of the canals, forming so that the residential areas and the rice fields are well protected, ensuring that rice production is safe from seasonal floods. Houses are built overlooking the canal and along the rural roads alongside the canals, with rice fields at the back; making it convenient for rice cultivation. The structure of the economy is mainly based on wet rice cultivation, pig husbandry and some small business activities.

Currently, Thanh An commune has built a dike system serving double rice cropping. In 2011, the commune began to pilot the third rice crop in the three hamlets. Beside agriculture and petty business, remittances from migrant workers play a significant role in the communal household income during the past 5 years.¹⁰⁵ The commune has two private enterprises trading in agricultural supplies; one combine-harvester unit consisting of 15 machines; and 15 cooperative units, however effective production is not high. The cooperative units are for agricultural production, but they only link several stages in the production: pumping for drainage, constructing and maintaining small dikes, breeding or cooperating in husbandry and livestock. These cooperatives have not yet associated with each other in product consumption or harvesting.¹⁰⁶

Regarding the road transportation, the commune has provincial highways 916B and 921C running through and main roads linking the commune with the central area of the

¹⁰² Can Tho Centre of Assessment and Construction Planning, 2011, p5.

¹⁰³ Ibid; p2.

¹⁰⁴ Report of the Chairman of the communes, at the Focus Group Discussion with Key Informants

¹⁰⁵ As reported in the focus group discussion with commune key informants.

¹⁰⁶ Can Tho Centre of Assessment and Construction Planning, 2011, p9.

district town, other communes of the district as well as the An Giang province which shares a border with Cambodia. As a result, it is convenient for those in the commune to travel and exchange goods. However, the inter-communal roads and inter-hamlet road channels are still under standard requirements. According to the criteria of the Ministry of Transport, the width of the hard surface of the standard road must be amounting to 3.5 meters or up, but most of the hardened rural roads of Thanh An commune do not reach this standard. The inter-communal concrete roads only reach about two third of the total - 7,650 meters long compared with the total 11,000 meters long. Road channels linking neighborhoods, residential areas and hamlets are only about fifty per cent concrete - 29,410 meters long compared with the total of 57,580 meters long.

Regarding fluvial transportation, the total length of waterway amounts to 90,030 meters, including 7 main canals totalling 42,370 meters long, and 9 on-farm canals totalling 47,660 meters long. These channels ensure transportation of goods and facilities for agricultural production, and respond to the need of drainage pumping for agricultural production.¹⁰⁷

Most houses in the commune are solid. There are no dilapidated and thatched houses. The number of solid houses is 134; the number of semi-solid houses is 1,732; and the number of tin-roofed and wooden-wall houses is 122. Thanh An has three kindergartens, six elementary schools and one middle school, which basically meet the education needs of the commune at the primary and secondary level. Thanh An also has a health station which is quite spacious, and which provides initial medical care and public health programs at the local level.

Regarding local infrastructure, in the commune densely populated areas, residential areas and the district town, are built on the ground with an elevation of 2.7 meters and up, combined with the protective dike system, these areas are not facing inundation and flood. Residential areas located in the center of the commune have invested in drainage and sewage systems. Other areas do not have these systems. Some rainwater penetrates the soil, and the rest flows into low-lying areas and runs out to the irrigation canals and waterways. For water supply, most households pump water from canals and use alum to clean it. Thanh An has medium voltage gridlines with a total length of 32,900 meters and low-voltage gridlines with a total length of 66,760 meters for production and domestic use of local households.

Regarding sanitation, there are serious problems with solid waste collection and treatment, especially in relation to the manure of raised pigs. Many residents do not apply any treatment for solid and water waste, causing serious water pollution. Hamlets have no garbage collection system.¹⁰⁸

Vietnam is a country that often faces natural disasters and it has therefore developed a number of policies and institutions to mitigate the adverse impacts of environmental events. A Steering Committee of flood and natural disasters prevention and control has

¹⁰⁷ Can Tho Centre of Assessment and Construction Planning, 2011, pp. 10-11

¹⁰⁸ Ibid; pp. 9-11

been set up from the central level to the ward and commune level, to take direct responsibility for responsive activities. The Steering Committee of the commune was set up with the contribution of relevant sectors and mass-unions and coordinated by the Commune People's Committee (PC) whose the head is also the PC's chairman. The District and City levels provide the Commune-level People's Committee with rescue boats, life vests, training on disaster control, and updated forecasting information. Based on the mass media and the direct guidance of superiors, the Steering Committee carries out duties at the office of the People's Committees of communes and address key points in relation to natural disasters.¹⁰⁹

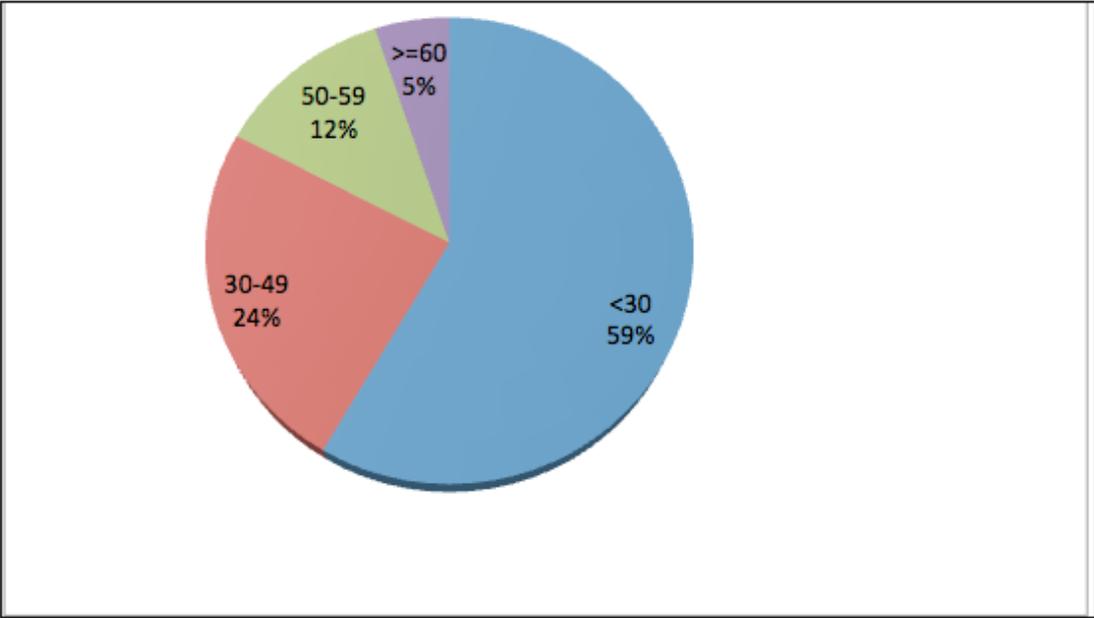


Socio-economic Characteristics of Surveyed Households: land ownership, agricultural activity, income and property of households

There were a total of 296 persons in the 50 surveyed households (52% male and 48% female). The ratio of the elderly is low (5.1% people are 60 and above), with most belonging to the labor force. 53.7% are single, 43.6% are married and 2.7% are widowed or divorced. The education level of members in the households is higher than that of the interviewees representing the surveyed households: 29.4% at primary and lower level, 27.7% at lower secondary, 31.4% at higher secondary, 9.8% at the college and upper level, compared from 50%, 32%, 14% and 4% for the interviewees (Refer to Table V1, Appendix C).

¹⁰⁹ Reported during the Focus Group Discussion with commune key informants.

Figure 12: Age of surveyed population

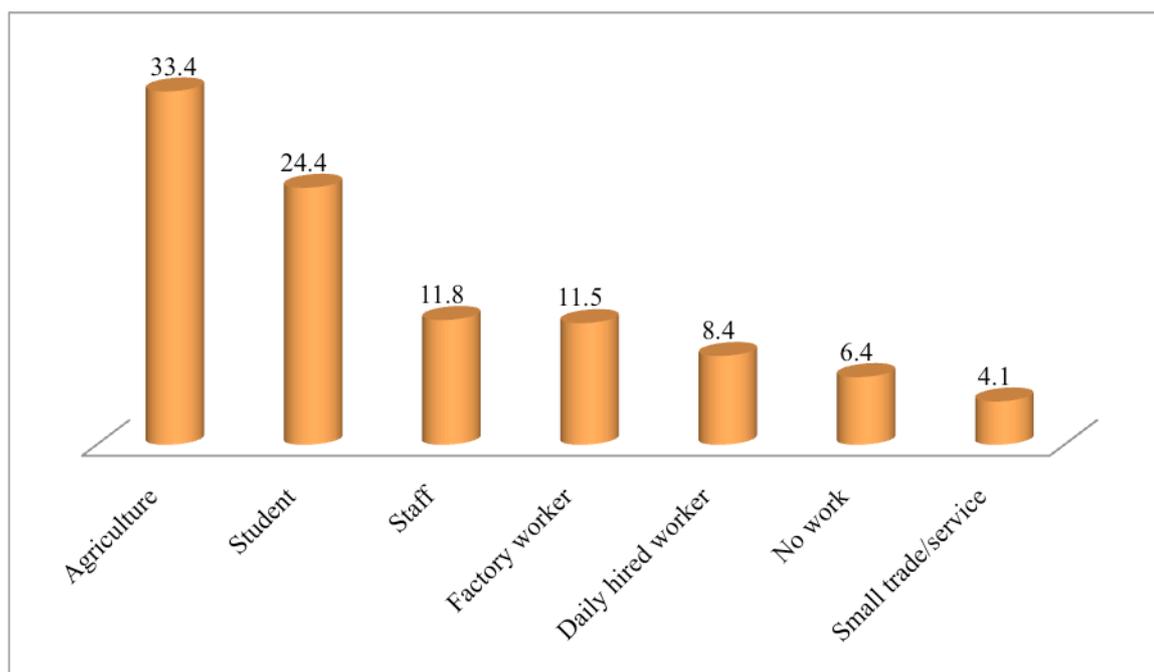


The results of the survey show that there is a huge gap between quintiles in the 5 groups of landholders in both residential and agriculture land. Residential landholding per capita is 123.4m², of which the lowest 20% of land holdings amount to only around 24.8 m², while the highest 20% hold land amounting to 279.7 m² (more than 12 times higher). Similarly, household agricultural land average per capita is 3,442.2 m², of which, the lowest 20% having an average of 418.7m², and the highest 20% having land on average amounting to 11,231.4 m², (nearly 27 times more than the lowest group) (Refer Table V3, Appendix C).

Livelihoods

Local residents work in many sectors such as small trade/service, agriculture, staff employment, daily hire work, and factory work. There has been some change in occupations over the last 10 years. The highest percentage occupation is agriculture, with 88% of 50 interviewees and 33.4% of all 50 households’ members. The percentage of people working as paid staff is a little bit higher than it was 10 years ago (11.8% against 9.5%, while the percentage of small/petty trade is only 4.1% nowadays compared to 5.1% in the past (Refer Table V1, Appendix C). As reported by local people, limited development of commerce and industry is a relevant indicator showing the dependence of the local economy on pure wet rice agriculture. When agricultural production is negatively affected by climate change related impacts, the livelihoods of local people are usually automatically adversely affected.

Figure 13: Current Occupation of all members of 50 interviewed households (%)



Agricultural activities concentrate on paddy production (98%), and raising pigs, poultry and cattle (10%).

Income

The average income per capital is 7.9 million VND per year. There is a big gap between the highest income group and the lowest, with the highest incomes amounting to about 24 times the lowest. The income per capita of the lowest group is 0.8 million VND per year (equal to only USD 38 per year) and the highest group is 19.2 million VND per year (equal to USD 914 per year). (Refer Table V3, Appendix C).

Property of Households

Thanh An is a remote village of Vinh Thanh district where the life quality is very poor. Property of households is also poor. Two kinds of assets which are very common are televisions and motorbikes (90% of total surveyed households have a television, 80% have a motorbike). (Refer Table V3, Appendix C).

Environmental Changes and Impacts on the Commune

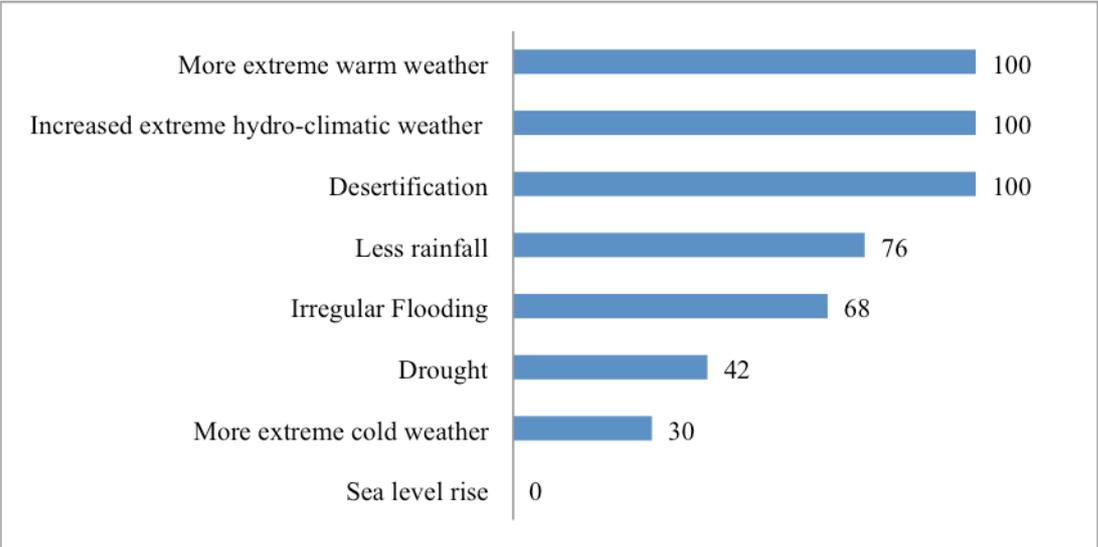
Environmental Changes

According to the respondents' awareness, there have been many changes in the environment over the last 10 years, such as: increased extreme hydro-climatic weather (reported by 100% of respondents); irregular flooding (68%); more extreme warm weather (100%); less rainfall (76%); drought (42%); and desertification (100%). In terms of the answers relating to desertification (see Figure 14 below), it is necessary to note that there was some confusion or misunderstanding between the interviewers and interviewees in the meaning of desertification. It is clear that in fact respondents to the Household Questionnaire understood 'desertification' to mean impoverishment or degrading of the soil quality. The information from the focus group discussion

with local residents and key informant commune leaders and officers clarifies that there is no occurrence of desertification in the commune in general and the surveyed community specifically. However, the soil in the commune is obviously being exhausted, impoverished, and degraded due to the lack of alluvial nutrients, less rainfall and drought.

Furthermore, though it was not seen clearly by respondents to the questionnaire survey, there is evidence of a threat of salinity in the area as a direct impact of sea level rise. Focus group discussions with local authorities and key informant interviews confirmed knowledge that saline water could arrive in the commune through the canals linking it with Kien Giang province and over the last several years, the saline water has been penetrating through canals and reaching towards the surveyed community. Knowledge of this threat was not clear at the community level as it is not yet evident in the surveyed area, however Can Tho authorities have warned that this is a growing threat and there is saline intrusion about 15km inland from the Thailand Gulf already, or about 5km away from the surveyed area.

Figure 14: Environmental changes in community in the last 10 years



The three most evident environmental changes, occurring in recent years are: extreme hydro-climatic weather, more extreme warm weather and desertification (understood as exhaustibility, impoverishment, and degrading of the soil).

“In the past, there were likely four different seasons per year, but the weather in the last years 5 or 7 has seemed to be irregular, causing many difficulties for rice crops. For instant, in the year 2011 there were more floods than in 2012, which was quite different from the previous cycle of seasons. We no longer see an amount of rainfall like in July or August many years ago.”
 (Male #39, born 1971, education level grade 7, farmer)

“The rain is likely to be unpredictable. Both rainy and dry seasons do not follow any order; sometimes there is some long-lasting heavy rain. The

livelihood of local people living along the channel depends much on the quality and quantity of flood water but unfortunately, the flood in recent years hasn't been as good as expected, resulting in little alluvium which is needed to have a good crop. Additionally, the heat seems so terrible that nobody can do their field work in the late morning and early afternoon. We have to reverse our daily routines, it means that we stay at home during the daytime and go to the rice field to work at night-time. As a matter of fact, all of our routines, working shifts are messed up and we must adjust our biorhythm. In recent years, the temperature has started to exceed the average temperature. It is too hot. Weather conditions are much more irregular and disordered". (Female#6, born 1958, education level grade 4, daily hired laborer).

"In the last four years, the weather has changed significantly. It has become hotter and hotter. Last Christmas, we could not experience and enjoy cold or even cool weather as we did many years ago. In the rainy season, the rainfall exceeds the quantity we want. By contrast, in the dry season, we suffer the heat from the sun. During the rice growing season, we need rain a lot but cannot see any raindrops, but when we are harvesting the rice crop, there is untimely rain. This makes harvesting much harder and much more costly, but there is much less yield and a low consumption price."(Female #32, born 1961, education level grade 3, farmer).

"The rainfall is unpredictable, the weather deteriorates more than normal. Usually, we only need to pay 50,000 VND for the monthly expenditures for electricity bills but because the hot days last longer we now have to pay double. In March, the weather is so terrible that the river is as dry as a bone."(Male #7, born 1961, education level grade 3, farmer).

Impacts of Environmental Changes on the Commune: Livelihood, Income and Life

Positive impacts

24% of the 50 respondents said that environmental changes have had some positive impacts, as follows:

- Sometimes, more rainfall provides clean water for cleaning the soil in the rice fields and vegetable crops. Moreover, it provides sufficient water for watering rice production.
- Sometimes, the blazing heat helps to dry rice instead of drying by machine. So, it helps to cut down production costs.

However, there are a series of negative impacts of environmental changes, which badly influence the quality of life of local people.



Negative impacts on health, water quality, soil quality and agriculture activities

Figure 15: Factors being negatively impacted by environmental changes (A)

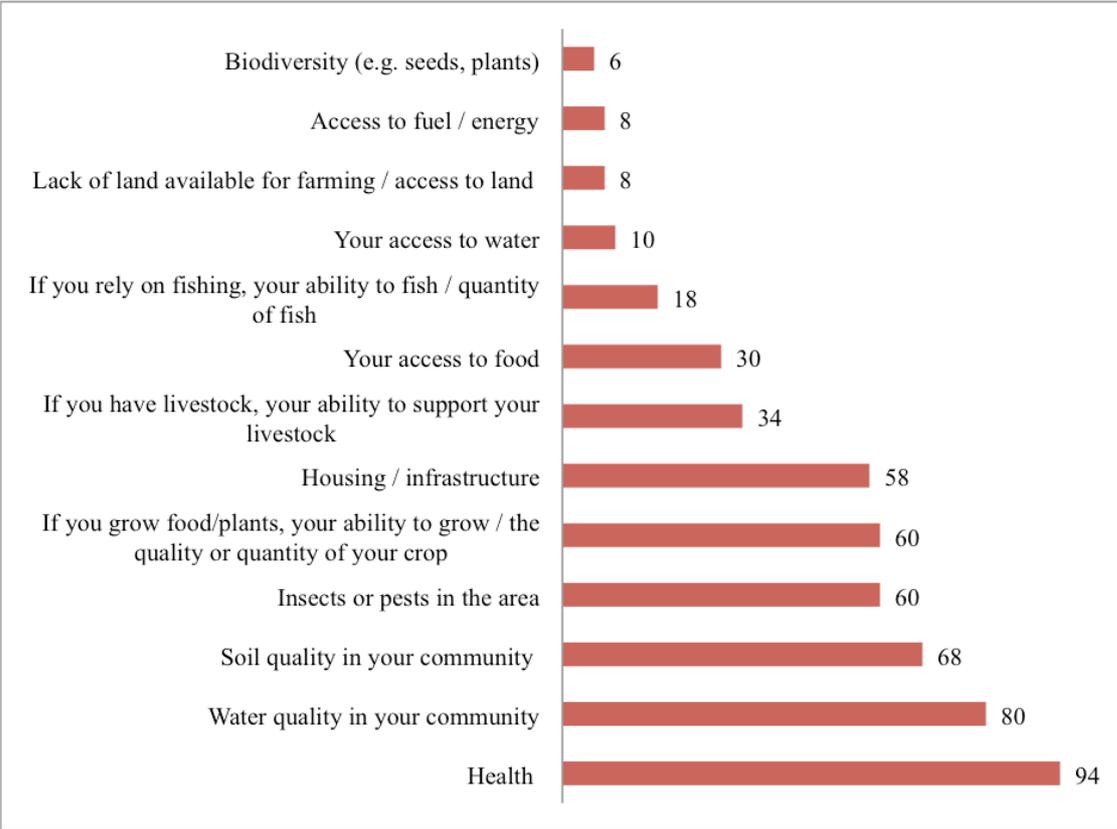


Figure 15 shows that environmental changes are negatively impacting the health of local people (94%), the water quality (80%), the soil quality (68%). Changes are also seen to be generating insects or pests in the area, which harms plants and crops (60%). Therefore, the quality or quantity of cultivated crops is decreasing fast. Further, housing and infrastructure such as buildings, roads, and riverbanks, are also affected.

There is a correlation between these negative impacts and a poor quality of life generally.

The health of local people is not good because of variety of diseases. It is not only from direct impacts of irregular weather changes, but also indirectly from impacts of environmental changes. Irregular weather changes as well as polluted air can be linked to an increase in skin diseases, cancers, and respiratory diseases. Water quality is degraded badly by many kinds of pesticides, insecticides, wastewater and solid waste, which evaporates in burning heat. People in the commune often get headaches resulting from bad smells originating from this sort of pollution.

“The health of poor farmers is not good. Sickness appears in every household because of poisonous things surrounding them. After finishing work in the field, the farmers have to buy medicine to cure diseases, resulting from the poisoned surface water and ground water. The income from our works cannot afford medical treatment fees.” (Female #6, born 1958, education level grade 4, farmer).

The water used for paddy production is extremely polluted due to a lack of awareness and knowledge of local people on how to protect the environment. Many farmers have been overusing pesticides, insecticides, and fertilizers in their production activities of farming and husbandry of pigs, fish farming, and rice crops. This leads to wastewater discharge directly into canals and waterways without any primary treatment. Combined with a lack of water flows from main rivers and canals, the waste water creates serious water pollution which is harming people’s lives, especially the health of women and children who are much more sensitive to water-borne diseases. Many reported that there is an obvious change in the colour and smell of water for both domestic use and production use.

“Five years ago, we could drink the water of canal E directly without boiling it but now it is extremely polluted, resulting from the waste water of domestic livestock breeding and pesticides as well. On the other hand, nowadays, the amount of flood water has not been as much as many years ago, so it cannot clean the dirty water and cannot fertilize the soil due to the lesser alluvium.” (Female #6, born 1958, education level grade 4, farmer).

“There has been a seasonal lack of water, especially in 2011. The water quality of the winter-spring season has not been affected, but it has in the summer-fall season because the river water is contaminated by aluminium, which may cause disease for the rice fields, and contains less alluvium. In the past, we could have one fifth of the alluvium in a full bowl of river water, compared with no more than one tenth at the present. The consequence of less alluvium is a decline of the soil quality and an increase in using fertilizer and an increase in the cost of production as well. Another typical sign of the decrease in the environment’s quality is the poisoning of water and soil from pesticides and wastewater coming from livestock breeding. Moreover, alien species have started to appear, such as cowage trees, and yellow medium-sized edible snails, no matter how hard the farmers try to get rid of them.” (Male #10, born 1968, education level grade 9, farmer)

“Contrary to the harmony of the weather in the olden days, the flood and the heat are now unpredictable, affecting the growth of crop and increasing production cost. If you sow seeds during the rainy days, it can completely fail and you have to do everything again.”(Male #45, born 1957, education level grade 2, farmer).

“The changes of weather have affected seriously the productivity, quality and effectiveness of crops. In the past, we did not need to use much pesticide but it’s changed completely at the present. If you do not want to see your plants die because of diseases, you must use a lot of chemicals. For all plants nowadays we need to spray varieties of chemicals such as pesticides, fertilizers, and stimulants. From fruits like banana and guava, to vegetables and rice, all are in need.” (As reported by an officer of the commune People Committee in a focus group discussion.)

Soil quality for agricultural production is also influenced: less alluvial, less fertile, and poorer nutrients. The lower level of flooding is one of the main reasons leading to the degrading of soil quality.

Sometimes, housing and infrastructure are seriously damaged due to strong whirling winds. Some houses were collapsed. Riverbanks, channel banks and roads are eroded when there are heavy rains.

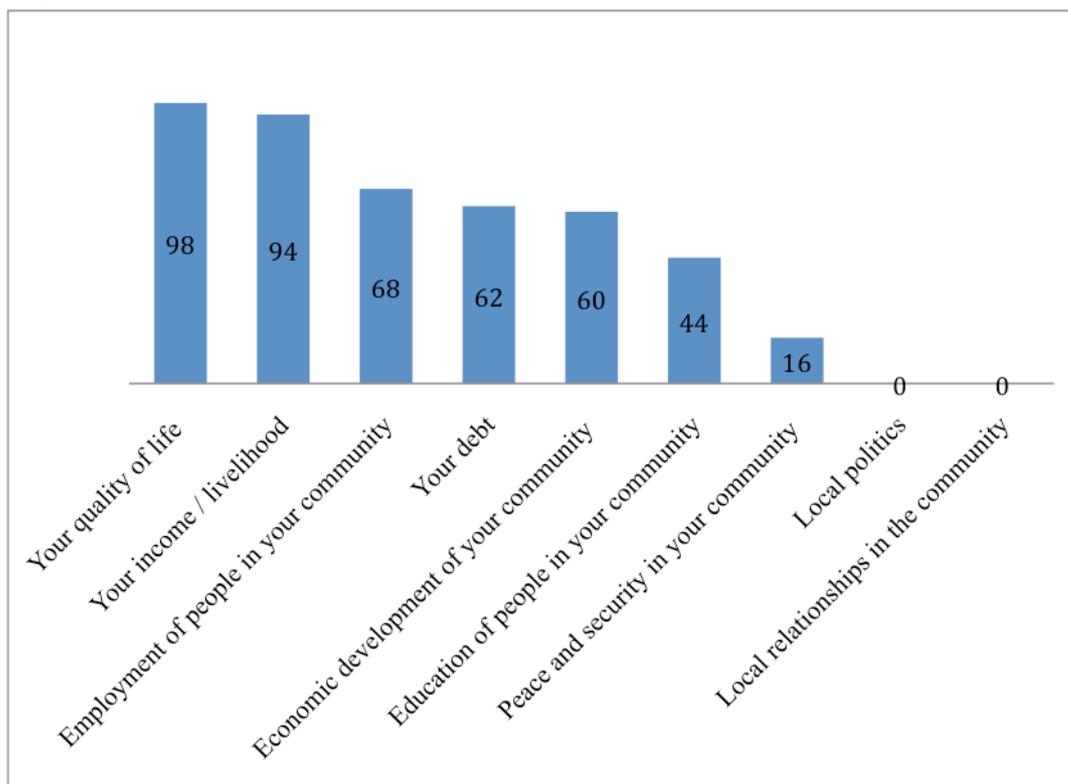


Negative impacts on agricultural activities, income and quality of life

There is a close correlation between agricultural activities, income and quality of life in the surveyed community. The main income source for local people is agricultural income. Environmental changes which influence agricultural activities also influence income and quality of life.

When being asked “are environmental changes having negative impacts on your life”, most people answered that they are experiencing: decreasing quality of life (98%), decreasing income/livelihood (94%), less employment (68% respondents), increasing debt (62%), and less economic development (60%).

Figure 16: Factors being negatively impacted by environmental changes (B)



Significant changes in incomes and livelihoods of farmers

Vegetable crops: The alteration of crop production to adapt to the changeable weather results in tension, increased costs and many risks when the weather is disadvantageous.

The unseasonal weather causes considerable difficulty in relation to rice crops; and there is a reported increase in harmful insects that in turn leads to a higher demand for pesticides which may pollute the environment, poison products and decrease profit.

Wind and rain concurrences close to harvesting time cause the rice crops to collapse, and lead to an increase in production costs, a decline productivity, and a decline in the quality of products as well. Moreover, blazing heat, water shortages and drought are key factors damaging rice crops, causing crop diseases and slower growth.

Livestock: As well as vegetable crops, livestock are also affected by unpredictable weather and the apparent consequence is an increase in diseases in livestock such as pigs, poultry and cattle. It is reported that such diseases are occurring more and more frequently, compared with several years ago, when diseases attacked livestock less frequently and usually only at a specific time of the year. A common disease is oedema in pigs, which can lead to a loss of appetite, and eventually death. Further, there were many reported cases of pregnant pigs losing their foetus as a consequence of polluted water and blazing heat.

Overall, options for livelihoods and jobs are limited and the lives of local people have not improved. Compared with ten years ago, interviewees perceived that their quality of live has decreased significantly.

“Failing crops pulls the development of the locality down and affects job opportunities. The harsh climate makes people feel tired and uncomfortable. Joblessness means that the poor fall into the trap of indebted situations. Generally, the quality of life is going down.” (Female #49, born 1976, education level grade 5, farmer)

“In the past, farming was very stable but in recent times, the changes in weather have resulted in increased costs and decreased profits. The farmers have to borrow money with high interest to re-invest and they have the burden of paying debts on their shoulders”. (Male #50, born 1971, education level grade 8, farmer)

Adaptation and sustainable livelihoods to cope with environmental variation

The farmers alter their daily routines, since they have to work at night and take a short rest in the daytime in order to avoid the heat. In recent years, the working day begins at 1 or 2 am and finishes at 8 or 9 am. One significant impact from this abnormal routine is a rise in electricity bills from daytime electricity use, while at the same time there is no change in total income, or there is even a decrease due to lean harvests.

Facing a declining quality of life, increased sickness, low income, unreliable access to jobs and changes in bio-routines, some residents in the community have made up their minds to emigrate to adapt to environmental changes.

Selectivity of Migration: Indirect Influence from Environmental Changes

Characteristics of Migrants

33.4% of people in surveyed households (99 people of 296 respondents of 50 surveyed households) have ever migrated. The ratio of male migrants is higher than that of female (55.6% and 44.4%, respectively). Most of them are young (74.7% under 30 years old) and single (72.7%). They have a higher education level (48.5% at higher secondary, 16.2% at college and upper level education) than non - migrants (69.9% of non - migrants had lower secondary education levels or lower).

Most migrants belong to households whose agricultural land per capita is average or above average (30.3% migrants have agricultural land per capita of average group and 29.3% migrants have agricultural land per capita of above average group; people whose agricultural land per capita belong to lowest group and highest group are non - migrants. (Refer Table V3, Appendix C)

People whose income per capita is in the average group and above average group migrate more than those of lowest group and lower group (Refer Table V3, Appendix C).

Choice of destination and characteristics of migrants

Ho Chi Minh City (HCMC), Can Tho City, Lam Dong, and Dong Nai provinces are destinations where people in the surveyed community often migrated to. Among these, HCMC is the most popular destination (60% of the total of 99 migrants), followed by 17% to Lam Dong, 10% to Dong Nai, 7% to Can Tho city and then other provinces.

Who migrated to HCMC and other provinces?

There is a big difference between males and females in choosing migration destinations. The ratio of men migrating to HCMC and Dong Nai province is higher than women (63.6% male and 54.5% female to HCMC; and 12.7% male compared with 6.8% female to Dong Nai province). The ratio of women migrating to Lam Dong (22.7%) is higher than men (12.7%).

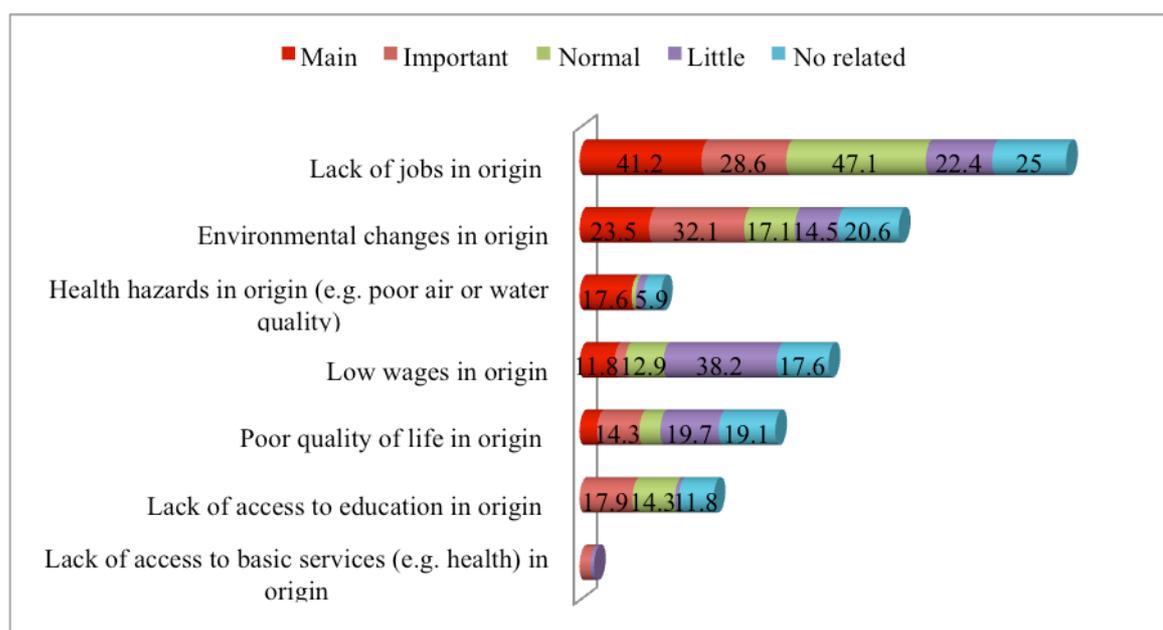
Those migrating to HCMC are younger (67.6% being 30 years or younger) and most are single (69.4%). For migrants to Lam Dong and Dong Nai, the ratio of migrants aged 30 to 49 years is higher than the under 30's group (Lam Dong: 33.3% versus 12.2%; Dong Nai: 20.8% versus 5.4%). The ratio of married migrants is also higher (Lam Dong: 33.2% married versus 11.1% single; Dong Nai: 22.2% married versus 5.6% single).

Most migrants who had a higher education level chose Ho Chi Minh City and Can Tho City to migrate to. People who migrated Lam Dong and Dong Nai had lower education levels.

Most migrants in HCMC work as staff and factory workers or study at college or university. Migrants to Lam Dong and Dong Nai mainly work in the agricultural sector (50% in Lam Dong and 42.9% in Dong Nai). (Refer Table V8, Appendix C)

Factors Influencing Migration Decisions

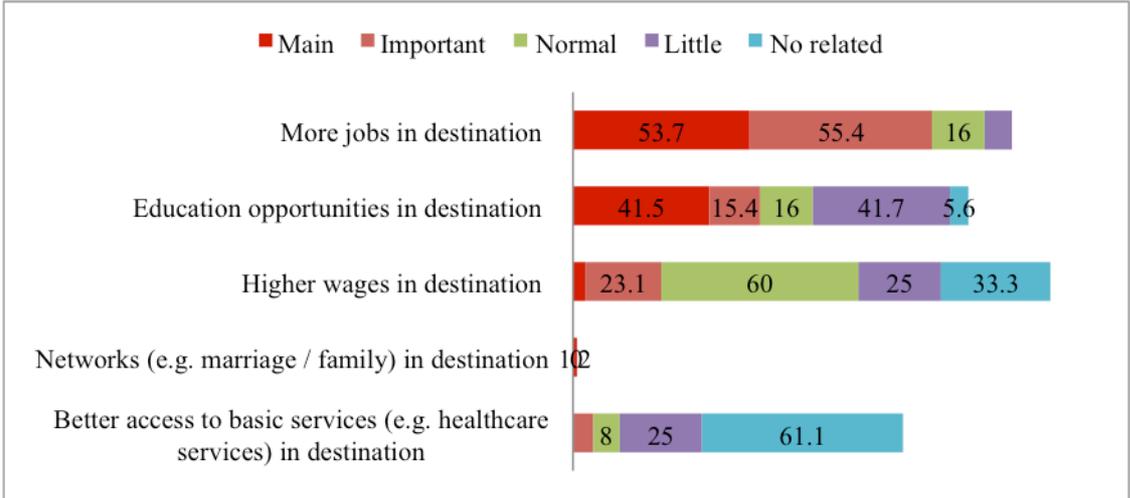
Figure 17: Factors in Origin Community Driving Out-Migration



The main factors driving out-migration from the origin community are a lack of jobs (41.2%), environmental changes (23.5%), and health hazards (17.6%).



Figure 18: Destination Factors Influencing Migration



People migrated to new places because most of them thought there were more job opportunities (53.7%) and better education opportunities (41.5%) in destination places.

Moreover, social networks also play a role in migration decisions. The qualitative findings in this study showed that most people in the commune have some heritage in Northern Vietnam, with many coming to the commune in the period from 1954-1955. Many have relatives originating from the North now living in migration destinations such as HCMC, Lam Dong and Dong Nai, and these existing social networks play a role in influencing migration decisions.

Many people reported that environmental changes are significantly affecting their lives. As mentioned above, they reported facing many difficulties relating to agricultural and livestock production, and therefore, some chose migration as a way to adapt to these environmental changes. 50% of respondents claimed that environmental changes and related impacts influenced decisions to migrate. The three most evident environmental changes that respondents said would influence future decisions to migrate are: increased extreme hydro-climatic weather (96%), warmer weather (76%) and irregular flooding (68%).

Figure 19: Environmental changes and related impacts influencing future decisions to migrate

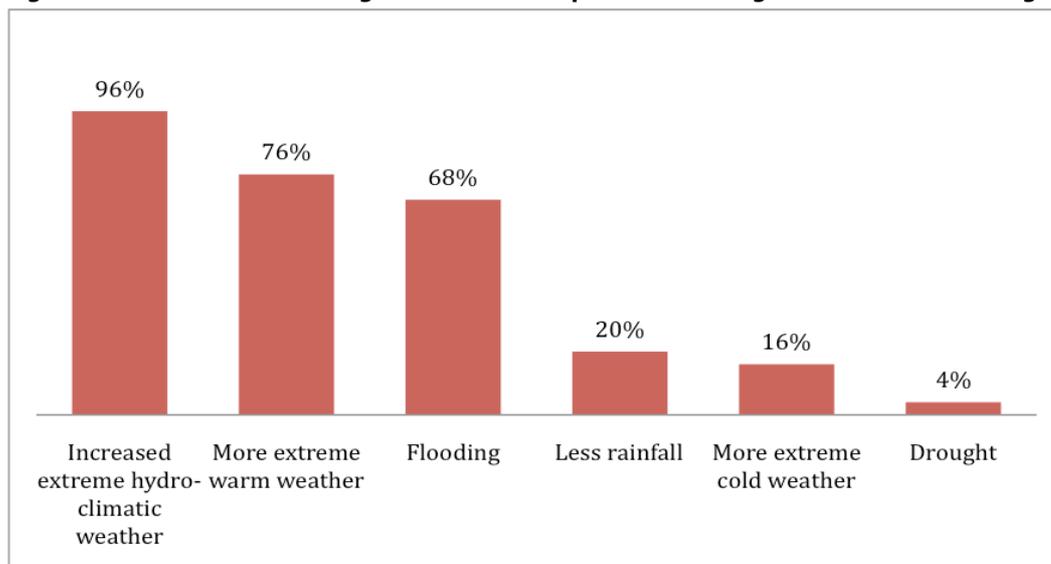


Figure 20: Relevant negative impacts (related to environmental changes) likely to contribute to future decisions to migrate

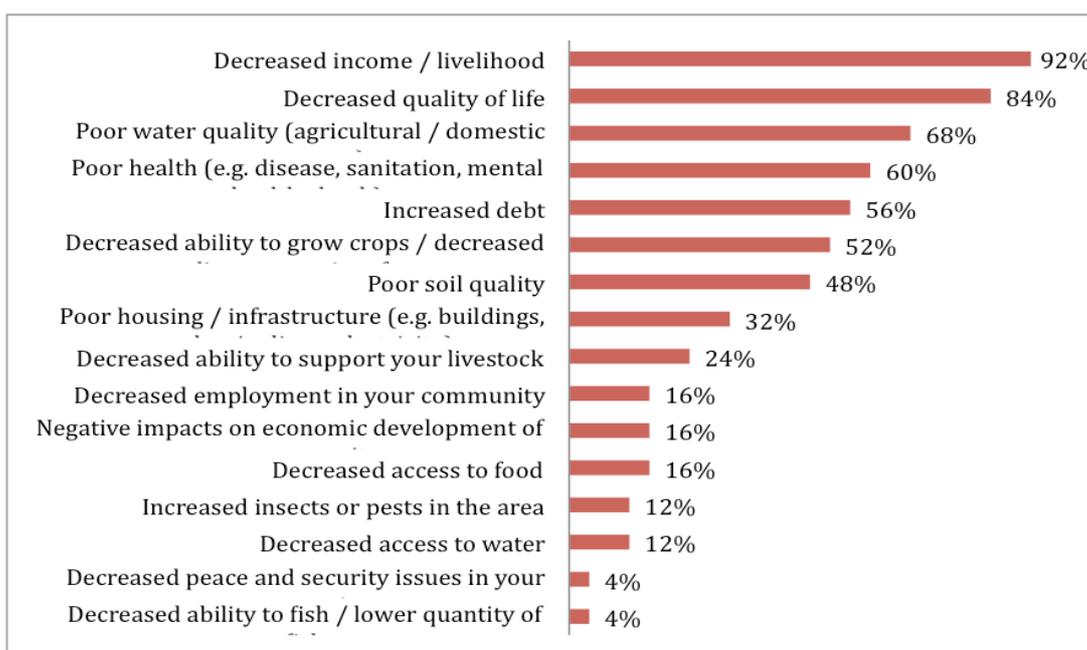
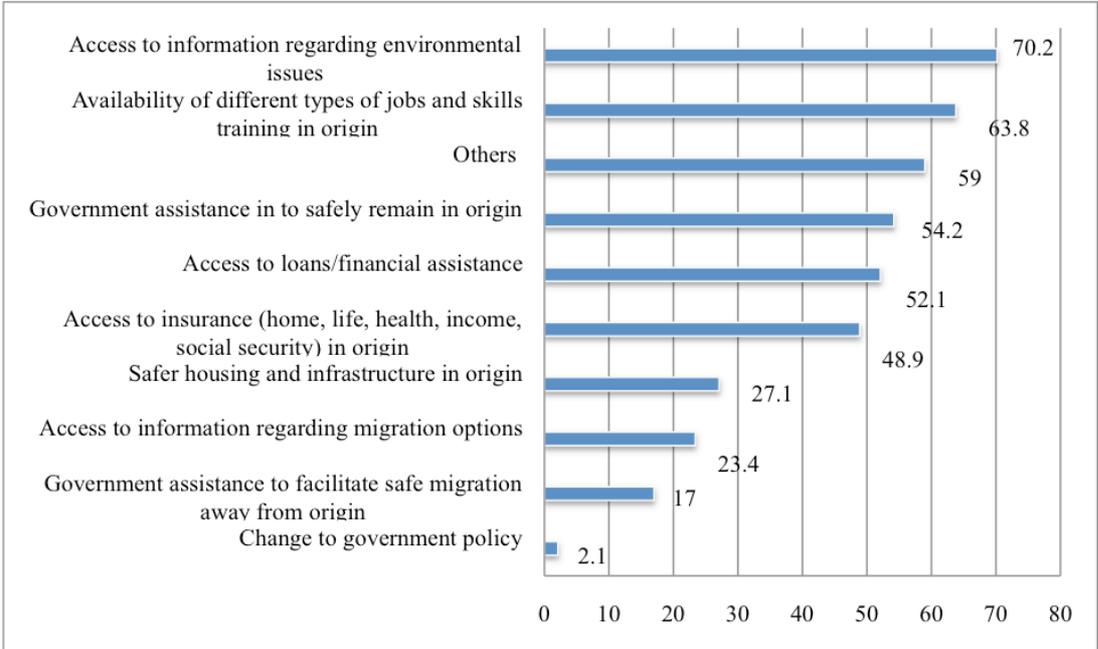


Figure 20 shows that decreased income/livelihood (92%), decreased quality of life (84%), poor water quality (68%), poor health (60%), and increased debt (56%) are the

top five negative impacts of environmental changes that are likely to push people to migrate away from the origin community in the future.

Vietnam Recommendations

Figure 21: Community needs for coping with environmental changes



The most pressing community needs for coping with environmental changes as expressed in the Vietnam case study are: access to information regarding environmental issues (70.2%); and availability of different of jobs and skills training in origin (63.8%). During focus group discussions with local residents and commune leaders, the following sentiments were expressed:

- There is an urgent need for more updated, more precise and more timely forecasting and news relating to weather, diseases and proposed measures to tackle environmental risks.
- More investment is required in small industries and trade to create more jobs for local residents and to mitigate forced migration flows.
- Central and city authorities should provide more budgets for dyke and embankment systems to fully protect rice fields and residential areas.
- More water supply investment is required, to build water treatment plants.
- Better financial policies are necessary, for example through loan provision to farmers to purchase harvesting machinery to assist in adapting to a lack of labour force.
- More mass-media programs are required to communicate information relating to climate change and its impacts, as well as information relating to safe migration.

Analysis & Synthesis of Research Findings

Below is an analysis of the findings of the primary research, as undertaken in the Second Consultation Meeting, outlining key similarities and differences in the respective case studies, and reflecting on whether the findings support the initial project hypotheses and existing discourse.

Key Similarities in Research Findings: Myanmar & Vietnam

Common findings between the Myanmar and Vietnam case studies included:

- The presence of environmental changes having negative impacts on the survey community (Vietnam: more extreme warm weather, increased extreme hydro-climatic weather, desertification/soil degradation; Myanmar: less rainfall, more extreme warm weather);
- A lack of jobs in the origin community was the main factor causing migration (77% of respondents in Myanmar, and 41.2% of respondents in Vietnam, cited this as a primary driver of migration);
- More jobs in destinations that people are migrating to (cited as primary ‘pull factor’ in both Vietnam case study: 53.7% and Myanmar case study: 91%);
- A small number of positive impacts were cited in each community: Vietnam 24% (more rainfall cleans water/soil, the heat dries rice crops), Myanmar 8% (sesame crop seeding possible due to less rainfall);
- There was a big gap between rich and poor in both survey communities, and widespread poverty was limiting people’s coping strategies in relation to negative environmental changes;
- Health issues related to environmental changes were found in both survey communities (Vietnam: waterborne diseases; Myanmar: heat-related problems including heat stroke experienced by the elderly); and
- Multicausality was evident in decisions to migrate in both case studies; various drivers of migration were identified, including environmental change as one factor.

Key Differences in Research Findings: Myanmar & Vietnam

Key differences in findings between the Myanmar and Vietnam case studies included:

- The number one environmental changes causing negative impacts were different in the country contexts (Vietnam: more extreme warm weather, increased extreme hydro-climatic weather, desertification/soil degradation; Myanmar: less rainfall, more extreme warm weather);

- In Vietnam, major changes to the farming community's lifestyle was apparent. For example, due to increased heat and other factors (including changes to communal farming practices), farmers were doing a lot of the farming work during the night to avoid the heat of the sun, causing a significant change to bio-routines. These changes are also affecting the electricity usage and costs for households, as they sleep more during the day and use fans and air conditioning in the home during the day.
- The primary negative impacts caused by environmental changes differed: in Vietnam the biggest negative impacts were on health (94%) and water quality (80%); in Myanmar the biggest negative impacts were on household debt (88%), incomes and livelihoods (86%);
- The nominated community needs in order to cope with climate change also differed, with most respondents in Myanmar suggesting the need for different types of jobs and skills training in origin (68%) and access to loans and financial assistance (66%); and respondents in Vietnam calling for access to information regarding environmental issues (70.2%) and availability of different types of jobs and skills training in the origin community (63.8%).

Unexpected Results & Issues Encountered

Myanmar

Issues encountered in the Myanmar research were the mixture of quantitative and qualitative questions in the Household Questionnaire, making the survey quite complex; and the tight time constraint of only five days in which to conduct training and undertake primary research.

Unexpected results included:

- Deaths reported of migrants from the area: a father and son from one household who were caught up in the conflict between Muslims and Buddhists in Rakhine State, and died in a riot there;
- The benefits of migration highlighted in one success story, wherein a household member migrated away for work, learned new skills in brick-making in the destination, then moved back to the origin village and established his own successful small business in brick-making;
- The range in different views of respondents regarding the benefits of migration, with some viewing the positives of saving money, gaining exposure and experience through migration, while others were reluctant to send their children to other areas; and
- Due to large migration flows out of Kyauk Padaung township in the Dry Zone area, with many migrating to Malaysia and Singapore, some of the villages in the area have changed their names to 'Malaysia Village' and 'Singapore

Village.’ ECODEV is aiming to conduct further research in this area in the future.

Vietnam

Issues encountered in the Vietnam research included problems in accessing the lowest income households, as they were busy sowing crops during the survey period. Further, as outlined above, some respondents misunderstood terms in the household questionnaire (‘sea level rise’ and ‘desertification’). In addition, due to the context in Vietnam and at the local level, respondents reported no issues with local politics, as it is common to avoid speaking about politics, to avoid any controversy or issues with authorities.

Unexpected results included further misunderstanding of terminology in the household questionnaires, in relation to some evident subjectivity in relation to perceptions of ‘extreme cold weather.’ Some respondents reported more extreme cold weather, despite the fact that Southern Vietnam does not experience extreme cold weather. This was due to subjective assessments of cold weather relative to usual temperature ranges.

Conclusions to be drawn from Primary Research

Generally the findings of the primary research in Vietnam and Myanmar support the initial hypotheses. Environmental changes are being felt by communities. Environmental changes are negatively impacting peoples lives. These environmental changes and related impacts are influencing migration. Other factors are also influencing migration (primarily lack of jobs in origins and access to jobs in destinations).

The research findings show a strong correlation between negative environmental changes and migration - perhaps somewhat stronger than predicted in the initial hypotheses. However, it is clear from responses to household questionnaires that whether or not communities are experiencing environmental changes (that may be linked to climate change) people will still migrate because of low incomes in origin, less jobs in rural areas, and more jobs and educational opportunities in destinations (usually urban centres). For example, when asked whether environmental changes and related impacts are likely to contribute to future decisions to migrate, 50% of respondents in Vietnam said that environmental changes and related impacts will not contribute to future decisions to migrate (See Table V12, Appendix C). While not refuting that negative environmental changes are occurring, respondents point to the fact that farming life is becoming more and more difficult, and so family members are seeking out better prospects in urban areas such as Ho Chi Minh City, Ha Noi, and Can Tho City, to find better jobs and higher levels of education. This process may be seen as the wider phenomenon of mechanisation of agricultural life, and global urbanisation.



Global Justice: Climate Change, Mobility, Solidarity

It is useful to consider both climate change and mobility in the context of ‘global justice;’ and recognise calls for genuine solidarity amongst nations in approaching both of these issues.

Climate Change as a Global Justice Issue

Climate change inevitably has a differentiated impact, depending on the physical conditions and the adaptive capacities of the countries and communities concerned. The poor are generally disproportionately affected by extreme weather events because of the poor quality of their housing, and also because their livelihoods are often connected to land and natural resources. In this light, susceptibility to climate-induced migration in the GMS may be distinctly higher than in many of the more developed regions of the world, as many GMS countries have a low adaptive capacity, including limited access to climate mitigation technologies, lower levels of development and equity, fewer resources and poor infrastructure.

A commonly cited assertion is that ‘the 50 least-developed countries are responsible for less than 1 percent of worldwide carbon emissions, yet the developing world records 99 percent of climate-related deaths and 90 percent of economic losses.’¹¹⁰ Castles argues that, there is a ‘decisively socio-economic, political and racial injustice’ to climate change impacts. He states that ‘98% of the 262 million people affected by natural disasters between 2000-2005, lived in the Global South.’¹¹¹ As

¹¹⁰ Funk, McKenzie, ‘Come Hell or High Water’, *World Policy Journal*, Vol. 26, No. 2 (Summer, 2009), pp. 93-100, The MIT Press and the World Policy Institute

¹¹¹ Castles, Stephen, and Colin Rajah, ‘Environmental Degradation, Climate Change, Migration & Development,’ *Accion Global de los Pueblos sobre Migracion, Desarrollo y Derechos Humanos*, Mexico, 2010

such, many argue that there is ‘clearly a responsibility on the part of high greenhouse gas emitters and industrialised nations to support wide-ranging adaptation efforts in the Global South, and especially community-based initiatives.’¹¹² It has been said that climate change is a by-product of ‘a neoliberal global economic system, which has created vastly unequal development between regions.’¹¹³ Within this system, wealthy developed countries continue to consume energy and natural resources excessively, and contribute to carbon emissions disproportionately; while the Global South suffers the majority of negative effects of human-induced climate change, which may lead to involuntary displacement of people.

The IOM has stated that ‘climate change is best understood as exacerbating...underlying structural factors of vulnerability.’¹¹⁴ It is a process that ‘does not take place in a vacuum but is closely associated with underdevelopment, inequalities within and between countries, global justice, and the lack of solidarity between States, human rights, or human security,’ which is why policy responses to climate change and migration must be accompanied by ‘renewed efforts to combat the very context that make people vulnerable in the first place.’¹¹⁵ This applies not only at the global and regional level, but also within regions and within States.

Mobility as a Global Justice Issue

Mobility, or the ability to move around the world, is also an issue of global justice. Citizens from the developed world have relatively easy access to travel and migration. They have the resources to afford it, and usually have much greater ease in accessing travel documentation such as visas. By comparison, citizens of less developed countries are less able to afford the costs of mobility, and face many more obstacles in gaining entry to regular migration pathways. Pecoud and de Guchteneire see ‘mobility is a privilege that is unevenly distributed among human beings...[and] citizenship [as] a birthright privilege that is difficult to justify.’¹¹⁶ It is also important to note that citizenship (of any nation) is not granted as a ‘birthright privilege’ to many stateless people in the GMS region. In international law, the human right to leave the home State (to emigrate) is recognized,¹¹⁷ however there is no corresponding right to enter another State, rendering the right ‘morally asymmetrical’ in practice.¹¹⁸ Some argue that freedom of movement should be granted to all, as ‘restrictions on mobility violate the liberal egalitarian perspective according to which people should have equal opportunities.’¹¹⁹

¹¹² Tacoli, Cecilia, ‘Migration, climate change and the multiple drivers of mobility: current debates, empirical evidence and implications for policy’, International Institution for Environment and Development, London, 2012

¹¹³ Castles, Stephen, and Colin Rajah, ‘Environmental Degradation, Climate Change, Migration & Development,’ Accion Global de los Pueblos sobre Migracion, Desarrollo y Derechos Humanos, Mexico, 2010

¹¹⁴ International Organization for Migration, ‘Disaster Risk Reduction, Climate Change Adaptation, and Environmental Migration: A Policy Perspective’, 2010

¹¹⁵ Piguat, Etienne, Antoine Pécoud, and Paul de Guchteneire, ‘Migration and Climate Change: An Overview’, *Refugee Survey Quarterly* (2011) 30 (3): 1-23

¹¹⁶ Antoine Pecoud and Paul de Guchteneire, ‘Migration without Borders: An Investigation into the Free Movement of People’, Global Migration Perspectives No. 27, (Global Commission on International Migration, 2005), p7

¹¹⁷ See ICCPR Article 12, ICPMW Article 8, ICERD Article 5, CRC Article 10, UDHR Article 13, General Assembly’s Declaration on the Human Rights of Individuals Who are not Nationals of the Country in which They Live Article 5

¹¹⁸ Antoine Pecoud and Paul de Guchteneire, ‘Migration without Borders: An Investigation into the Free Movement of People’, Global Migration Perspectives No. 27, (Global Commission on International Migration, 2005), p7

¹¹⁹ Ibid; p8

It follows then that unequal distribution of resources affects personal decisions about whether or not to migrate in the face of climate change impacts. Migration is not an option for everyone, because due to a lack of resources, the most vulnerable people are often not able to move. The IOM acknowledges that, ‘within any given set of social and environmental circumstances, decisions to move or stay depend on incomes, social networks, local patterns of gender relations and the perceived alternatives to moving.’

¹²⁰ By this logic, greater mobility equality is required to support migrants who are driven by climate change, through the opening up of migration pathways within and from the developing world. Further, the provision of resources and assistance to affected communities is important, so that the decision whether to stay or go is a decision that is genuinely available to them.

In the GMS region, affected communities are disproportionately rural agricultural communities, who are reliant on the natural environment for their livelihoods, and who typically have much lower incomes than those in urban areas. Within these affected communities, there also exist significant disparities of wealth, which greatly affect the vulnerability and adaptive capacities of households. Further, even where households do have the resources and capacity to move, many do not wish to permanently migrate, but prefer to stay close to their ancestral ground where possible, or access seasonal migration options that allow them to return home. It is therefore vitally important that policy responses to climate change affected communities do not automatically assume that migration is an appropriate or desirable adaptive strategy. Where possible, people should have a right to a decent life in their home communities, including adequate access to basic services (e.g. education, healthcare), social protection, and the ability to support themselves through decent work. A human rights framework should be applied both where people migrate and where they remain, to ensure fair and just outcomes for all.

Solidarity

Migrant rights advocate Colin Rajah calls for the development of a ‘climate justice movement among migrant communities and migrants rights advocates,’ arguing that a ‘preoccupation with defining “climate refugees” or “environmental migrants” has been useless and distracted attention and resources from the more urgent need for critical analyses and corresponding policy responses.’¹²¹ He argues that the processes of the UNFCCC are being ‘co-opted by economically rich and politically powerful states’ and points to the need for significant advocacy from migrant communities and migrants rights advocates to join the climate justice movement in demanding ‘just and equitable development while protecting the human rights of migrants.’¹²²

Rajah cites promising evidence of such advocacy at the 2010 People’s World Conference on Climate Change and the Rights of Mother Earth (PWCCC), convened by

¹²⁰ International Organization for Migration, ‘Disaster Risk Reduction, Climate Change Adaptation, and Environmental Migration: A Policy Perspective’, 2010

¹²¹ Castles, Stephen, and Colin Rajah, ‘Environmental Degradation, Climate Change, Migration & Development,’ Accion Global de los Pueblos sobre Migracion, Desarrollo y Derechos Humanos, Mexico, 2010

¹²² Ibid;

the Bolivian government, which emphasized the importance of a human rights framework and more significant engagement with migrant communities. The People's Accord of the PWCCC¹²³ and the working group archives from the conference contain discussion of climate change as a global justice issue, including the assertion that 'climate-drive migration stems from the dominant capitalist global development agenda which overexploits and degrades natural resources.' Rajah sees the People's Accord as a counterbalance to the 2009 Copenhagen Accord, but also views further analyses and engagement with the climate agenda as necessary, to 'ensure both climate justice and migrants rights advancements.'¹²⁴

Viewing both climate change and mobility through a global justice lens makes clear the need for solidarity among States in addressing and managing these issues. Developed States need to acknowledge their contributing role in relation to the effects of climate change being felt in the developing world. It is also necessary to recognise that the disproportionate concentration of resources in wealthy countries and the histories of unequal development do not point to a self-evident right to maintain the status quo and reinforce exclusionary policies and practices. Rather than taking a State-centric national security approach, stressing 'sovereignty and border control' and concerned with 'refugees and undocumented migrants;' a people-centred human security approach should be applied, stressing 'interdependences between countries and trans-border cooperation'¹²⁵ and focussing on the situation of migrants (and non-migrants) in terms of their human rights. In the words of Fridtjof Nansen, 'Nothing great and good can be furthered in the world without cooperation.'¹²⁶

Solidarity is also necessary within States, as increasingly, discriminatory attitudes and policies are evident in response to rural-urban migration. For example, household registration is used to control rural populations, and deny them access to basic services in urban areas. Vietnam's National Assembly has recently approved a new law (Luat Thu do (the Law of Capital) no. 25/2012/QH13 approved by the National Assembly on Nov 21, 2012)¹²⁷, introducing education and income tests for internal migrants to Hanoi, in an attempt to control the population of Hanoi. The rationale supporting the law, and in particular Article 19 (Inhabitant Management), which will take effect on 1 July 2013, aims to ensure that urban centres do not become overcrowded, and the services do not become overloaded. Social workers argued against this law, stating that public services in cities should be available to all citizens equally. These kinds of policies lead to segregated populations, and foster discrimination and inequality.

¹²³ *Peoples Accord*, World People's Conference on Climate Change and the Rights of Mother Earth, 22 April 2010, Cochabamba, Bolivia

¹²⁴ Castles, Stephen, and Colin Rajah, 'Environmental Degradation, Climate Change, Migration & Development,' Accion Global de los Pueblos sobre Migracion, Desarrollo y Derechos Humanos, Mexico, 2010

¹²⁵ Antoine Pecoud and Paul de Guchteneire, 'Migration without Borders: An Investigation into the Free Movement of People', Global Migration Perspectives No. 27, (Global Commission on International Migration, 2005), p3

¹²⁶ As quoted in the Chairperson's Summary of the Nansen Conference on Climate Change and Displacement, June 2011, available at: <http://d2530919.hosted213.servetheworld.no/expose/global/download.asp?id=2274&fk=1629&thumb=>

¹²⁷ Vietnam Luat Thu do (the Law of Capital) no. 25/2012/QH13. Available at: http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&mode=detail&document_id=1649

Areas for Further Research

Areas for potential further research, as discussed at the Second Consultation Meeting, include:

- Further case studies exploring climate change and migration in other GMS countries.
- Research into the impact of development projects (for example: dams, mining, deep sea ports) on people's lives and livelihoods in the GMS.
- Further research into where people are migrating to, including expectations prior to migration, and the reality of the situation of migrants in the destination (for example: Have they been able to access more jobs? Has migration had positive impacts on their lives?).
- Further interviews in survey areas (origin communities), exploring expectations regarding migration (for example: better jobs, better income), and actual outcomes.
- Further analysis of histograms in Myanmar and Vietnam case study sites.
- Examination of voluntary and involuntary migrants, and outcomes (for example: who is happy in destination, who is not, and why?).
- Research into success stories and failure stories of migration, following from the origin to the destination, and exploring the impact of migratory status on peoples' lives. For example, during one interview with a returnee in Vietnam in this study, the returnee said that although the income in the destination was higher, they never felt safe as they could not afford a room in a good neighbourhood, and they had the feeling of humiliation from being looked down on as a second-class citizen.
- Research into the Kyauk Padaung township area of Myanmar's Dry Zone (as mentioned above), where there is a high incidence of out-migration to Singapore and Malaysia, and some villages have even been re-named 'Malaysia Village' and 'Singapore Village.'
- Research in the Myanmar Delta region, which is being significantly impacted by climate change; and comparative analysis of environmental migration in the Delta region and the Dry Zone.
- Research into protection or migration mechanisms in place in the GMS region, whether these mechanisms are effective in responding to climate change-related migration, and what positive and/or negative impacts these mechanisms are having on affected communities.

General Comments

Recommended Responses to CC-M

The IOM held a 2011 dialogue that aimed to identify some of the main areas in which governments and institutions may need to ‘reinforce their capacities to manage the complex interactions between climate change and environmental degradation and human mobility.’ The dialogue was guided by a human rights framework, and by the notion that a comprehensive approach to managing environmental migration would aim to ‘(a) minimize to the extent possible forced migration resulting from environmental factors; (b) where forced migration does occur, to ensure assistance and protection for those affected and seek durable solutions to their situation; and, lastly, (c) to facilitate the role of migration as an adaptation strategy to climate change.’ It was suggested that policymakers ‘should make full use of all existing bodies of laws and instruments, both hard and soft law (humanitarian, human rights and refugee law, instruments on internal displacement, disaster management, legal migration and others);’ and ‘that migration management systems should be linked with other policy objectives in terms of climate change adaptation, disaster risk reduction, humanitarian responses and sustainable development.’¹²⁸

The most suitable approach to CC-M is the enhancement and utilisation of a range of existing mechanisms, including: mitigation and adaptation under the climate change framework; disaster risk reduction and disaster management mechanisms; law relating to internally displaced persons; international human rights law; sustainable development approaches; and managed migration pathways. Further, in terms of soft law, the 2011 Nansen Principles (as outlined earlier in this report) are a very useful tool with which to shape a response. To ensure an appropriate contextual approach, the range of mechanisms elaborated below should be tailored to specific regional or country situations.

Mitigation and Adaptation under the Climate Change Framework

In responding to the effects of climate change, it is vital not to forget importance of mitigation efforts under the UNFCCC (such as the 1997 Kyoto Protocol), which aim to reduce carbon emissions, slow down negative climate processes, and ‘avoid the unmanageable.’¹²⁹ Without continuing mitigation efforts targeting the root causes of climate change, a purely reactive response would risk perpetuating the notion that high carbon-emitting countries can continue with damaging practices and simply deal with the consequences at a later date (or leave the consequences to be dealt with by more vulnerable developing countries).

In ‘managing the unavoidable,’¹³⁰ adaptation measures under the UNFCCC, including NAPAs, should be developed to incorporate migration as a key adaptation strategy that may be utilised by affected communities; and also should support, as far as possible,

¹²⁸ International Organization for Migration, ‘International Dialogue on Migration, Intersessional Workshop on Climate Change, Environmental Degradation and Migration, Chair’s Summary’, March 2011

¹²⁹ UNHCR, ‘Climate change, natural disasters and human displacement: a UNHCR perspective’, 2009

¹³⁰ Ibid;

people's ability to remain in their communities if they do not wish to migrate. International processes like the 2007 Bali Road Map and Action Plan, and the 2009 Copenhagen Accord, should be built upon to also recognise the forms that migration may take in relation to climate change, and provide funding for programs that support those who are moving, and, where possible, those who wish to remain. These frameworks should be critically engaged with, with special attention paid to ensure that adaptation and mitigation mechanisms (such as REDD) are not in fact having negative effects on communities and the environment.

Disaster risk reduction and disaster management mechanisms

In the case of sudden onset climate change impacts, like floods, cyclones or storm surges, existing disaster management and humanitarian emergency response mechanisms should be utilised. The disaster risk reduction framework, including the Hyogo Framework for Action 2005 - 2015 (and the 2005 ASEAN Agreement on Disaster Management and Emergency Response) should also be implemented, in order to prepare for and mitigate the impact of potential disasters, increase resilience, and reduce underlying risk factors. It is important that these tools are not used purely in a reactive way, but are used in combination with other instruments in order to provide enduring solutions for those at risk. Such solutions may include migration options out of severely affected or high-risk areas.

Guidelines relating to internally displaced persons

The 1998 Guiding Principles on Internal Displacement identify rights and guarantees relevant to the protection of persons from forced displacement and to their protection and assistance during displacement as well as during return or resettlement and reintegration. Internally displaced persons (IDPs) are 'persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border.'¹³¹ The Principles are consistent with international human rights law and international humanitarian law. They provide, inter alia, that: 'internally displaced persons shall enjoy, in full equality, the same rights and freedoms under international and domestic law as do other persons in their country,' without discrimination (Principle 1); National authorities have the primary duty and responsibility to provide protection and humanitarian assistance to internally displaced persons within their jurisdiction (Principle 3); and, significantly, 'all authorities and international actors shall respect and ensure respect for their obligations under international law, including human rights and humanitarian law, in all circumstances, so as to prevent and avoid conditions that might lead to displacement of persons' (Principle 5).

The Principles have been endorsed by the UN General Assembly and the African Commission on Human and People's Rights, and consistent application of some of the principles by States may eventually lead to the development of customary

¹³¹ 1998 *Guiding Principles on Internal Displacement*

international law. However, at present, as useful as they might be, the Principles do not bind States. Further, while useful as one element in a range of tools that may respond to climate change displacement, the Principles do not provide any guidance on movement across national borders, or approaches to supporting migration (rather than displacement) as an adaptive strategy. Notwithstanding the limitations to the Principles, it is clear that they are very useful in relation to the situation of those displaced by climate related natural disasters within national borders.

Human Rights & Migrants Rights

The most important paradigm through which to approach climate change-related movement, is the human rights framework. A purely protection-based approach (for example, a new ‘climate refugee’ treaty) is not the best way forward, as it risks obscuring the human rights of those affected, especially ‘those relating to cultural integrity, self-determination, and statehood.’¹³² Human rights, as enshrined in international law (including in the UDHR, ICCPR, ICESCR, CRC, CERD, and CEDAW) should be protected in the State of origin. As far as possible, free agency and full exercise of rights should be facilitated, and a genuine decision regarding whether to migrate or remain should be provided. Where a decision is made to migrate, human rights must also be upheld in the destination.

Migration is often the final outcome of an inability to adapt to the adverse effects of climate change, and the ensuing effect on fundamental human rights.¹³³ In facing negative climate change (or other) impacts, people usually decide to move when their situation ‘falls below a critical threshold of tolerance, below which they no longer perceive possibilities of survival according to local norms of safety, dignity and well-being.’¹³⁴ While adherence to, and perceptions of, economic, cultural and social rights vary greatly around the world, ‘the most basic consideration is ability to survive above a local minimum standard of decency.’ As Patrick Taran argues, ‘at its essence, displacement today is in no small part the direct consequence of the breakdown or absence of sustainable community and the denial of human dignity.’¹³⁵ Efforts to assist communities in adaptation efforts, reducing vulnerability and increasing resilience, should aim to facilitate the full enjoyment of human rights by those affected, in their home communities.

When the decision to migrate across national borders is made, migrants are facing an increasingly hostile global environment, shaped by notions of national security, border control and xenophobia. Despite a steady and rapid process of globalisation, the opening up of borders to flows of goods, services and capital, and the fact that more than 150 million people live outside their home countries,¹³⁶ there remains an increasing resistance to the free movement of people across national borders, particularly people from the developing world. This is evident in anti-refugee

¹³² Jane McAdam, ‘Protection or Migration? The “Climate Refugee” Treaty Debate’ in *Climate Change, Forced Migration, and International Law* (Oxford University Press, 2012) 186 – 211, p199

¹³³ The effects of and approaches to climate change can be seen to intersect with human rights in a number of conceptual areas including but not limited to: right to life; right to adequate food; right to water; right to health; right to security; rights of indigenous people; rights of the child; right to development (as recognized in the UN Millennium Declaration); housing, land and property (HLP) rights; and right to self-determination.

¹³⁴ Patrick Taran, ‘Human Rights of Migrants: Challenges of the New Decade’ (2001) 38(6) *International Migration* 7, p13

¹³⁵ *Ibid*;

¹³⁶ *Ibid*; p7

sentiment, and in the mistreatment of migrant workers in many parts of the world. This trend is also becoming more and more evident within national borders, as reactionary responses to rural-urban migration foster prejudice and inequalities.

Hostility is frequently made manifest in policies that criminalise ‘illegal migrants’, rendering them ‘outside the protection of law, contrary to the inalienability of human rights protection.’¹³⁷ The term illegal migrant renders people criminal without affording the human rights of recognition before the law or due process. Even where migrants are ‘legal’ and have come through regular channels, violations of migrants’ rights are prevalent, and migrants often constitute some of the most vulnerable segments of a country’s population. It has been said that ‘violations of migrants’ human rights are so widespread and commonplace that they are a defining feature of international migration today,’ and the resistance to recognition of the rights of migrants is ‘bound up in exploitation of migrants in marginal, low status, inadequately regulated or illegal sectors of economic activity.’¹³⁸

The migrant rights regime advocates for equal rights for migrants, and a rights-based approach to all migration. The 1990 Convention on the Protection of All Migrant Workers and Members of Their Families (CPWM), while specifically addressing labour migration, also has potentially great utility for ‘nearly all other migrants in vulnerable situations, notably those who are in irregular situations.’¹³⁹ Recognising that many climate change-affected communities are already using traditional migration schemes (such as labour migration, education and family reunion visa streams) as a means to adapt and withstand the challenges to their livelihoods and security, the strengthening of existing protections for all migrants is clearly advantageous in the context of climate change.

Some recommendations for the strengthening of the migrant rights system include: further ratification of the CPWM; the adoption at a national level of international standards (such as CERD and ILO Conventions relating to migrants); the enhancement of anti-discrimination legislation; improved interagency, interstate, and regional cooperation; the establishment of a monitoring body to implement laws and provide remedies for migrants’ rights violations; the implementation of national plans of action addressing migration, discrimination and integration; and the promotion of respect for multiculturalism and diversity.¹⁴⁰

The UN Human Rights Council has recognised the link between human rights and climate change in resolution 7/23 (2008), resolution 10/4 (2009) and resolution 18/22 (2011), affirming ‘that human rights obligations, standards, and principles have the potential to inform and strengthen international and national policy making in the area of climate change, promoting policy coherence, legitimacy, and sustainable outcomes.’ The Australian Human Rights Commission has argued that ‘a human rights-based approach to climate change refocuses and re-centres the debate on individuals and communities.’ It is argued that the value of such an approach is its focus on

¹³⁷ Patrick Taran, ‘Human Rights of Migrants: Challenges of the New Decade’ (2001) 38(6) *International Migration* 7, p23

¹³⁸ *Ibid*; p7

¹³⁹ *Ibid*; p17

¹⁴⁰ *Ibid*; p42

individuals as rights holders, emphasis on local knowledge, principles of non-discrimination and equity, and the identification of core minimum human rights standards available to guide policy-makers.¹⁴¹

Sustainable Development

In responding to the climate change and migration nexus, a holistic approach that aims at improving the situation of affected communities in places of both origin and - where people migrate - the destination, necessitates considerations of sustainable development. The 1987 Brundtland Commission defines 'sustainable development' as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'¹⁴² Sustainable development strategies can be seen to overlap with climate change mitigation and adaptation strategies, and are also beginning to be recognised as an important element in migration policies.

Tacoli argues that reducing vulnerability to climate change can only be achieved through sustainable development. She argues that the role of local governments and governance systems is increasingly recognised as central, but their capacity in the Global South is low (especially in small towns), and should be supported through development strategies.¹⁴³ She calls for further attention to the structural non-environmental factors that make people more vulnerable to the impacts of climate change, including: 'the management of urbanization to accommodate growing urban populations and avoid the increase of urban poverty;' the concentrations of people living in high climate change risk areas; and 'the impacts of transformations in agricultural production systems and the construction of infrastructure;' particularly because most of the time, the most vulnerable are also 'the ones who have least representation in policy debates.'¹⁴⁴

Cantho City, in Southern Vietnam, is known of the 'bread basket' of the country, due to the high levels of rice production in the area. Cantho is facing climate change threats in the form of regular and increasing flooding from the Mekong Delta, and rising sea levels that are salinifying water supplies and damaging agricultural production. The Climate Change Coordination Office (CCCO) in Cantho City is focusing on adaptation to allow communities to withstand the mounting impacts of climate change. The CCCO has undertaken strategic climate change resilience planning for 2010 to 2015 that aims to assist the poor by preventing livelihood stress, and preventing forced out-migration of the local population. The CCCO is undertaking studies investigating the threshold beneath which people can no longer tolerate their local conditions and must move to ensure their quality of life. It aims to use its research as a basis for a socio-economic development plan for the region, so that people in Cantho are not forced to move away.¹⁴⁵ This is an example of where

¹⁴¹ Australian Human Rights Commission, Climate Change and Human Rights, n.d. Available at: http://www.hreoc.gov.au/human_rights/climate_change/index.html

¹⁴² International Organization for Migration, 'International Dialogue on Migration, Intersessional Workshop on Climate Change, Environmental Degradation and Migration, Background Paper', March 2011

¹⁴³ Tacoli, Cecilia, 'Migration, climate change and the multiple drivers of mobility: current debates, empirical evidence and implications for policy', Presentation, International Institute for Environment and Development, London, 2011

¹⁴⁴ Tacoli, Cecilia, 'Migration, climate change and the multiple drivers of mobility: current debates, empirical evidence and implications for policy', International Institute for Environment and Development, London, 2012

¹⁴⁵ Discussion with Mr Ky Quang Vinh, Director of the Climate Change Coordination Office, Cantho City, at the Mekong Migration Network's First Consultation Meeting regarding the Research Project 'Climate Change and Migration', Chiang Mai, 17-18 August 2012

sustainable development and adaptation measures are being combined in efforts to respond to climate change.

As well as using sustainable development to prevent involuntary migration, voluntary migration may also be seen as a constructive sustainable development strategy. Mobility in many forms - seasonal, temporary or permanent - has the potential to contribute to development in the community of origin through the provision of remittances by migrants, through the transfer of skills and knowledge, and through relieving population density. In a 2012 report, the ADB recommended the incorporation of a development framework into climate adaptation strategies, stating that by framing climate-induced migration in a development agenda, community resilience may be increased.¹⁴⁶

In a 2009 report prepared for the UN Expert Group Meeting on Population Dynamics and Climate Change, Tacoli noted the necessity for a 'radical change in perceptions of migration.' She argued that rather than migration management based on control, 'policies might more usefully aim to accommodate changes in migration patterns that result from environmental degradation, economic growth or crisis, and other wider transformations,' which would more effectively contribute to adaptation and 'other development goals.'¹⁴⁷ In 2012, Tacoli reflected that the impacts of climate change will increase pressures on those who rely on agricultural production for their income, and lead to more people needing to undertake seasonal migration or non-farm work in urban centres.¹⁴⁸ It is thus important that policy supports such movement, rather than attempting to restrict mobility.

Supporting Existing Migration Pathways

It is clear that existing migration pathways are already being utilised by those affected by climate change, in order to diversify livelihoods, access employment, manage risk, or for reasons of personal security. Migration should be recognised as a positive adaptive strategy in many cases, and those who choose to migrate should be supported through managed migration programs. Harvey and Barnidge stress 'the importance of giving due regard to the human rights framework in the construction of a well-managed and humane regulatory system for migration.'¹⁴⁹ Current migration processes should be improved to better protect the human rights of migrants, and should be expanded to allow more equitable access - particularly within and from the developing world - to migration as a preparatory and/or responsive strategy, and as a component of sustainable development.

The IOM presents strong arguments in favour of giving more recognition to migration as an adaptation strategy, reflecting that while 'environmental migration is often portrayed as a failure to adapt to a changing environment and as a worst case

¹⁴⁶ Asian Development Bank, 'Addressing Climate Change and Migration in Asia and the Pacific, Final Report', 2012

¹⁴⁷ Tacoli, Cecilia, 'Crisis or adaptation? Migration and climate change in a context of high mobility', Prepared for Expert Group Meeting on Population Dynamics and Climate Change UNFPA and IIED In Collaboration with UN-HABITAT and the Population Division, UN/DESA 24-25 June 2009

¹⁴⁸ Tacoli, Cecilia, 'Migration, climate change and the multiple drivers of mobility: current debates, empirical evidence and implications for policy', International Institution for Environment and Development, London, 2012

¹⁴⁹ Colin Harvey and Robert Barnidge, 'Human Rights, Free Movement and the Right to Leave in International Law' (2007) 19(1) International Journal of Refugee Law 1, p20

scenario;’ in fact, although at times ‘migration can be a manifestation of acute vulnerability, it can also represent a logical and legitimate livelihood diversification and adaptation strategy.’¹⁵⁰ Further, ‘migration can help reduce risks to lives, livelihoods and ecosystems; it contributes to income diversification and enhances overall capacity of households and communities to cope with the adverse effects of environmental and climate change.’¹⁵¹

Harvey and Barnidge point to a current overall international approach to migration that is based on a ‘framework of control’ rather than a human rights framework. They see this as ‘both root and reflection of the fundamental contemporary impediments to rationally and effectively addressing international migration;’¹⁵² and argue that instead of fear and control, the preferable basis should be ‘long-term economic and social development considerations in the context of respect for international humanitarian and human rights norms.’¹⁵³

To facilitate the positive benefits of migration, it is argued that there must be ‘a significant degree of autonomy and choice in mobility decisions’ which can be maximised by ‘ensuring that those who move are accorded the same rights as people in the host community (which, in domestic law, would ordinarily mean at least the rights of permanent residents); facilitating mutual understanding between these groups; providing assistance with relocation costs (hence calls for an international relocation fund); clarifying property rights; and strengthening emergency response systems.’¹⁵⁴ Barnett and Webber,¹⁵⁵ for the Commission on Climate Change and Development, propose a similar policy response and warn against framing migration as a ‘threat,’ as this ‘leads to policies that do little to control migration, but which do limit the benefits of migration to migrants, their communities of origin, and their host communities.’¹⁵⁶

The ADB also proposes the strengthening and expansion of current migration channels to accommodate climate-related migration, stating that ‘these channels should be reinforced to allow for increased migration flows.’ This approach would facilitate the sending of remittances, which ‘can greatly reduce the vulnerability of families and communities living in regions at risk.’¹⁵⁷ The ADB argues that international cooperation regarding migration should be increased; bilateral and subregional agreements enhancing freedom of movement should be developed (for example, a visa-free ASEAN); seasonal, short-term and more permanent labour migration should be expanded; and intergovernmental organisations that deal with climate-induced migration should ‘step up collaboration.’¹⁵⁸

¹⁵⁰ International Organization for Migration, ‘Disaster Risk Reduction, Climate Change Adaptation, and Environmental Migration: A Policy Perspective’, 2010

¹⁵¹ *Ibid*;

¹⁵² Patrick Taran, ‘Human Rights of Migrants: Challenges of the New Decade’ (2001) 38(6) *International Migration* 7, p31

¹⁵³ *Ibid*;

¹⁵⁴ Jane McAdam, ‘Protection or Migration? The “Climate Refugee” Treaty Debate’ in *Climate Change, Forced Migration, and International Law* (Oxford University Press, 2012) 186 – 211, p202

¹⁵⁵ Barnett, Jon, and Michael Webber, ‘Accommodating Migration to Promote Adaptation to Climate Change’, Commission on Climate Change and Development, University of Melbourne, 2009

¹⁵⁶ *Ibid*;

¹⁵⁷ Asian Development Bank, ‘Addressing Climate Change and Migration in Asia and the Pacific, Final Report’, 2012

¹⁵⁸ *Ibid*;

The Colombo Process (initiated in 2003) is a regional consultative process on overseas employment and contractual labour for countries of origin in Asia. It is an example of a regional dialogue that may be built upon to accommodate increased flows of climate-related migrants. The dialogue focuses on: protection and provision of migrant workers; optimizing benefits of organised labour migration (including through increasing remittance flows and enhancing development impacts); and increasing institutional capacity and cooperation with destination countries. Bilateral agreements may also be utilised. For example, seasonal worker programs have been established in Australia and New Zealand, providing a migration scheme for labourers from Pacific Islands. Each of these schemes is premised, at least ostensibly, on the idea that seasonal migration will contribute to economic development in the countries of origin of migrants. These regional and bilateral arrangements are examples of existing managed migration options that should be developed to include climate-related migrants. It is important however, that migration options should be based on a solid foundation of human rights and dignity.



Final Comments

The According to the IPCC, 'warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.'¹⁵⁹ The specific effects of this pattern of global warming are uncertain, however trends are being observed around the world, including: significant variations in precipitation patterns, drought, higher temperatures, increased evidence of severe weather events, sea-level rise, and saltwater intrusion into coastal and groundwater resources. The impacts of these changes on communities are already being felt, in the form of livelihood stress, and threats to personal safety, security, and health. The future effects of climate change are unpredictable and hard to quantify, but it is recognised that climate change will have a growing influence on human movement.

Despite dramatic predictions of millions of 'climate refugees' escaping environmental devastation, it is necessary to exercise restraint in considering the most appropriate

¹⁵⁹ Intergovernmental Panel on Climate Change, Climate Change Synthesis Report, 2007

response to climate change-related migration. The nexus between climate change and migration is complicated, and is entangled with many other causal drivers, including: socio-economic factors; access to information and resources, government policies; business interests, investments, infrastructure and development; and the availability of alternative livelihoods and support networks. There are significant definitional problems in identifying what exactly would constitute ‘climate change migration,’ and some substantial risks in directly linking migration to climate change. These risks include the danger of parties co-opting the nexus for their own gain, including: to distract from other key (man-made) drivers of migration; as a rationale for forced resettlement; to support securitisation and militarisation of migration; and to fuel anti-migrant sentiment and support exclusionary and xenophobic population control measures.

There have been numerous calls for a protection-based ‘climate refugee’ regime to address climate-related movement. From an advocacy perspective, it is true that lobbying for a new international treaty may ‘successfully generate attention and place climate change-related movement on the international agenda,’ however, as McAdam argues, ‘it is imperative that advocacy is well-informed.’¹⁶⁰ A treaty response is inappropriate, as it attempts to universalise a very complex, and contextually subjective phenomenon, thereby attempting to reduce the many renditions of climate change-related movement into a narrow and possibly arbitrarily defined narrative. It is inappropriate because a protection regime is reactive and creates victims, rather than recognising the many positive entrepreneurial strategies that communities are already undertaking to adapt to climate change, including through migration. It is inappropriate because there is an evident lack of political will to implement a new protection regime, and the process of creating a new international convention is likely to distract attention and resources from the response mechanisms already in place that may be effectively built upon and utilised.

It is important to consider both climate change and mobility as issues of global justice, and to urge greater solidarity amongst States and peoples in addressing these issues. The developing world is much more vulnerable to the impacts of climate change, and is also much less able to access mobility as an adaptive tool. This imbalance should be addressed, and the developed world must recognise that climate change is a global phenomenon, that requires a truly global effort to counteract the negative effects on communities, through shared knowledge, resources, and responsibility. This global approach however, should not be universal in application, but should facilitate contextually appropriate responses at the regional, national and local level. Appropriate responses will make use of existing mechanisms, including: mitigation and adaptation under the climate change framework; disaster risk reduction and disaster management mechanisms; laws relating to internally displaced persons; the human rights & migrants rights frameworks; sustainable development approaches; and managed migration pathways.

The 2011 Nansen Principles are a useful instrument with which to guide responses. The Nansen Principles provide that responses ‘need to be informed by adequate knowledge

¹⁶⁰ Jane McAdam, ‘Protection or Migration? The “Climate Refugee” Treaty Debate’ in *Climate Change, Forced Migration, and International Law* (Oxford University Press, 2012) 186 – 211, p196

and guided by the fundamental principles of humanity, human dignity, human rights, and international cooperation;’ and further, ‘the voices of the displaced or those threatened with displacement or loss of home or livelihood must be heard and taken into account, without neglecting those who may choose to remain.’¹⁶¹

It is clear that climate change will have significant negative effects on human life in the coming decades. Former UN High Commissioner for Human Rights, and prominent climate justice advocate, Mary Robinson, warns that, ‘climate change threatens to be one of the great injustices we inflict on our grandchildren and great-grandchildren,’ cautioning, ‘we need to look at the potential impacts of climate change 100 years hence and plan for a world very different to that in which we live today.’¹⁶² Measured and informed responses, based on existing mechanisms, offer the best hope of countering the negative impacts of climate change. Existing mechanisms should be built upon, to recognise the agency and human rights of affected communities, prevent forced migration where possible, and facilitate voluntary migration as a positive adaptive strategy.

¹⁶¹ Norwegian Refugee Council, ‘The Nansen Conference: Climate Change and Displacement in the 21st Century’, Oslo, Norway, June 5-7, 2011

¹⁶² Irish Independent, ‘Robinson warns on climate change,’ 6 October 2012

Appendices

APPENDIX A: ABBREVIATIONS

Table A: Abbreviations

ha	hectare
HH	Household
kg	kilogram
km	kilometer
m	meter
PC	People Committee
VND	Vietnam Dong

APPENDIX B: MYANMAR RESEARCH: STATISTICAL DATA

Table M1: Statistical Description of Members of surveyed household

No	Characteristics	Frequency	%
1	Gender		
	Male	115	47%
	Female	128	53%
2	Age		
	< 30	140	58%
	30- 49	64	26%
	50 - 59	19	8%
	>=60	20	8%
3	Place of Birth		
	Bay Taw	1	0.4%
	Day Daye	1	0.4%
	Kan Yin	1	0.4%
	Magyi Chae Htauk	234	96%
	Maywe Kone	1	0.4%
	Myay Pyar Kan	1	0.4%
	Shar Taw	1	0.4%
	Wet lutt	1	0.4%

	Yaw Pay Tin	1	0.4%
	Yay Le Kyune	1	0.4%
4	Marital Status		
	Single	125	51%
	Married	105	43%
	Divorced	3	1%
	widowed	10	4%
5	Ethnic		
	Burma	243	100%
6	Language		
	Burmese	243	100%
7	Religion		
	Buddhism	243	100%
8	Education (age > 5)		
	No Education	9	4%
	Monastery	70	30%
	Primary School	102	44%
	Middle School	40	17%
	High School	9	4%
	Diploma	1	0.4%
	Don't Know	2	1%
9	Current Occupation		
	Dependent	34	14%
	Housework	14	6%
	Farming	26	11%
	Livestock	1	0.4%
	Fishery	5	2%
	Wage Labor	78	32%
	Skill Labor	7	3%
	Vendor	6	2%
	Government Staff	3	1%
	Shopkeeper	2	1%
	Small Restaurant	3	1%
	Religious Worker	3	1%

	Student	37	15%
	Migrant worker	5	2%
	Cow watcher	3	1%
	Business Owner	7	3%
	Snack seller	1	0.4%
	Photographer	1	0.4%
	Agriculture	7	3%
10	Living years at this commune		
	<= 10 Years	39	16%
	11 - 15 Years	31	13%
	16- 20 Years	34	14%
	> 20 Years	139	57%

Table M2: Household Detail

No	Characteristic	Frequency	Percentage
1	Annual Household Income		
	<= 500000 Kyats	16	32%
	50000 - 1000000 Kyats	27	54%
	Above 1000000 Kyats	7	14%
2	Household Owned land		
	Yes	22	44%
	No	28	56%
3	Household Owned land (acre)		
	<= 3 acre	18	86%
	Above 5 acre	4	19%
4	Household own any other substantial assets		
	YES	5	10%
	NO	45	90%
5	Household Property		
	Audio Cassette	1	20%
	Motorbike	3	60%
	Water pump	1	20%
6	Household depend on sources for livelihood		
	Agriculture	27	54%
	Fishing	2	4%

Other natural resources	11	22%
Mechanic	1	2%
Contribution	4	8%
Own Business	1	2%
Photo Shop	1	2%
Skill Labor	1	2%
Wage Labor	19	38%

Table M3: Environmental Changes in Community in Last 10 Years

	YES		NO		UNKNOWN	
	Freq	%	Freq	%	Freq	%
Environmental changes						
Increased extreme hydro-climatic weather (eg. more rainfall, storms , cyclones)	4	8%	46	92%	0	0%
Flooding	4	8%	45	90%	1	2%
More extreme warm weather	46	92%	4	8%	0	0%
More extreme cold weather	1	2%	49	98%	0	0%
Less rainfall	49	98%	1	2%	0	0%
Drought	3	6%	47	94%	0	0%
Desertification	2	4%	48	96%	0	0%
Sea Level Rise	2	4%	48	96%	0	0%
Land slide	9	18%	41	82%	0	0%

Table M4: Environmental changes in community in the last 10 years

	YES		NO		UNKNOWN	
	Freq	%	Freq	%	Freq	%
Having a negative impact on life and production						
Your access to food	37	74%	13	26%	0	0%
Your access to water	5	10%	45	90%	0	0%
Water quality (agricultural / domestic purposes) in your community.	1	2%	49	98%	0	0%
Soil quality in your community	20	40%	29	58%	1	2%
Housing/ Infrastructure (eg. buildings, roads, pipelines, electricity)	2	4%	48	96%	0	0%
Health (eg. Disease, sanitation, mental health, death)	34	68%	16	32%	0	0%

If you grow food/plants, your ability to grow/ the quality or quantity of your crop	29	58%	18	36%	3	6%
If you have livestock, your ability to support your livestock	19	38%	29	58%	2	4%
If you rely on fishing , your ability to fish/ quantity of fish	2	4%	46	92%	2	4%
Lack of land available for farming/ access to land	8	16%	40	80%	2	4%
Access to fuel energy	5	10%	45	90%	0	0%
Biodiversity (eg. seeds, plants)	6	12%	42	84%	2	4%
Insects or pests in the area	21	42%	27	54%	2	4%
Having a negative impact on income						
Your income / livelihood (eg. your ability to earn a living to support yourself)	43	86%	7	14%	0	0%
Your quality of life	14	28%	35	70%	1	2%
Your debt	44	88%	6	12%	0	0%
Peace and security in your community (eg. conflict/ crime/ insecurity)	1	2%	49	98%	0	0%
Local politics	1	2%	48	96%	1	2%
Local relationships in the community	5	10%	45	90%	0	0%
Economic development of your community	20	40%	30	60%	0	0%
Employment of people in your community	40	80%	10	20%	0	0%
Education of people in your community	21	42%	29	58%	0	0%

Table M5: Statistical Description of Migrants

No	Characteristic	Frequency	Percentage
1	Gender		
	Male	61	74%
	Female	21	26%
2	Age		
	Age <= 18	20	24%
	Age 19 - 24	16	20%
	Age 25 - 39	29	35%
	Age 40 - 60	17	21%
3	Migrant place		
	Aung Lan	1	1%
	Bamaw	2	2%

	Kan Pyar	1	1%
	Kaw Thaug	1	1%
	Magway	7	9%
	Malaysia	3	4%
	Mandalay	9	11%
	Meihthila	1	1%
	Moneywa	1	1%
	Nay Pyi Taw	6	7%
	Pauk	1	1%
	Pyin Oo Lwin	1	1%
	Sagaing	1	1%
	Thailand	3	4%
	War tau Chaung	1	1%
	Yangon	42	51%
	Yaw	1	1%
4	Mode of transport for migration		
	Bus	73	89%
	Aeroplane	4	5%
	Trawler jeep	3	4%
	Motor boat	2	2%
5	Travel documentation		
	ID/ NRC	65	79%
	Documentation	16	20%
	Passport	1	1%
6	Occupation in Origin		
	Dependent	1	1%
	Farming	12	15%
	Fishery	4	5%
	Wage Labor	54	66%
	Skill Labor	3	4%
	Student	1	1%
	Business Owner	4	5%
	No Response	3	4%
7	Occupation in Destination		

	Wage Labor	31	38%
	Skill Labor	29	35%
	Vendor	2	2%
	Trader	2	2%
	Government Staff	3	4%
	Shopkeeper	1	1%
	Small Restaurant	4	5%
	Business Owner	8	10%
	Photographer	1	1%
	Agriculture	1	1%
8	Living years at this commune		
	<= 1 Year	62	75.6
	2 - 5 Years	17	20.7
	above 5 Years	3	3.7

Table M6: Environmental changes having any positive effects

No	Description	Freq	%
1	Positive effects		
	YES	4	8%
	NO	44	88%
	UNKNOWN	2	4%

Table M7: Environmental changes and the related impacts contribute to future decisions to migrate

	Freq	%
YES	9	18%
NO	41	82%

Table M8: Environmental changes(s) contribute to future decision to migrate

	Yes	
	Freq	%
Increased extreme hydro-climatic weather (eg. more rainfall, storms , cyclones)	0	0%
Flooding	0	0%
More extreme warm weather	5	56%
More extreme cold weather	0	0%
Less rainfall	9	100%

Drought	0	0%
Desertification	0	0%
Sea Level Rise	0	0%
land slide	4	44%

Table M9: Relevant Negative impacts (related to environmental changes) contribute to future decision to migrate away from the origin community

Negative Impact	YES	
	Freq	%
Decreased access to food	2	22%
Decreased access to water	0	0%
Poor water quality (agricultural/domestic purposes)	0	0%
Poor soil quality	1	11%
Poor housing/ infrastructure (eg. buildings, roads, pipelines, electricity)	0	0%
Poor health (eg. disease, sanitation, mental health , death (1	11%
Decreased ability to grow crops/ decreased quality or quantity of crops	5	56%
Decreased ability to support your livestock	2	22%
Decreased ability to fish / lower quantity of fish	2	22%
Decreased land available for farming / lack of access to land	1	11%
Decreased access to fuel / energy	0	0%
Decreased biodiversity (eg. seeds, plants)	2	22%
Increased insects or pests in the area.	2	22%
Decreased income/ livelihood (decreased ability to earn a living to support yourself)	7	78%
Decreased quality of life	0	0%
Increased debt	7	78%
Increased peace and security issues in your community (eg. conflict/ crime/insecurity)	0	0%
Negative impacts on local politics	0	0%
Negative impacts on local relationships in the community	1	11%
Negative impacts on economic development of your community	4	44%
Decreased employment in your community	2	22%
Decreased access to education in your community	3	33%

Table M10: Factors of Migration from Origin Community

	Main		Important		Normal		Little		Not Related	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Environmental Changes in origin	58	72%	4	5%	11	14%	1	1%	7	9%
Low wages in origin	51	63%	12	15%	8	10%	1	1%	9	11%
Lack of jobs in origin	62	77%	12	15%	6	7%	0	0%	1	1%
Poor quality of life in origin	5	6%	2	2%	5	6%	11	14%	58	72%
Lack of access to basic services (eg. health) in origin	7	9%	2	2%	8	10%	1	1%	63	78%
Lack of access to education in origin	12	15%	2	2%	5	6%	2	2%	60	74%
Health hazards in origin (eg. poor air or water quality)	2	2%	0	0%	1	1%		0%	78	96%
Illegal logging and deforestation in origin	0	0%	0	0%	0	0%	2	2%	79	98%
Forced relocation from origin (eg. government resettlement)	0	0%	0	0%	0	0%	0	0%	81	100%
Lack of security / conflict in origin	0	0%	0	0%	0	0%	0	0%	81	100%
Social problems in origin (eg. discrimination)	0	0%	0	0%	0	0%	0	0%	81	100%
Sudden natural disasters not identified under section (B). (e.g. earthquake)	0	0%	0	0%	0	0%	0	0%	81	100%
Man-made disaster (eg. chemical or oil spill, industrial accident)	0	0%	0	0%	0	0%	0	0%	81	100%

Political reasons (eg. corruption, poor governance, poor government policy) in origin	0	0%	0	0%	0	0%	0	0%	81	100%
Negative impacts of big projects in origin (eg dams, mining, roads, infrastructure, big business)	0	0%	0	0%	0	0%	0	0%	81	100%

Table M11: Drivers of Migration from Destination

	Main		Important		Normal		Little		Not Related	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Education opportunities in destination	33	41%	4	5%	10	12%	8	10%	26	32%
More jobs in destination	74	91%	3	4%	4	5%		0%		0%
Higher wages in destination	65	80%	8	10%	6	7%		0%	2	2%
Better access to basic services (eg. healthcare services) in destination	34	42%	4	5%	20	25%	7	9%	16	20%
Social Networks	53	65%	8	10%	8	10%		0%	12	15%

Table M12: Migration Destinations

Migration Destination	Frequency	Percent
Yaw	1	1%
Yangon	43	52%
War Taw Chaung	1	1%
Thailand	2	2%
Sagaing	1	1%
PyinOoLwin	1	1%
Nay Pyi Taw	9	11%
Monywa	1	1%
Mandalay	11	13%
Malaysia	3	4%

Magway	5	6%
Kaw Thaug	1	1%
KanPyar	1	1%
Bamaw	1	1%
Bago	1	1%
AungLan	1	1%

Table M13: Community needs to cope with environmental changes

	YES		NO		UNKNOWN	
	Freq	%	Freq	%	Freq	%
Government assistance in to safely remain in origin	28	56%	18	36%	4	8%
Safer housing and infrastructure in origin	4	8%	42	84%	4	8%
Access to loans/financial assistance	33	66%	16	32%	1	2%
Availability of different types of jobs and skills training in origin	34	68%	14	28%	2	4%
Access to insurance (home, life, health, income, social security) in origin	13	26%	24	48%	13	26%
Access to information regarding environmental issues	15	30%	21	42%	14	28%
Access to information regarding migration options	16	32%	29	58%	5	10%
Government assistance to facilitate safe migration away from origin	6	12%	36	72%	8	16%
Change to government policy (rehabilitate)	3	6%	32	64%	15	30%
Forest plantation	1	2%	32	64%	17	34%

APPENDIX C: VIETNAM RESEARCH: STATISTICAL DATA

Table V1: Statistical description of respondents and members of surveyed HH

Characteristics	Respondent/interviewee		Member	
	N	%	N	%
Gender				
Male	25	50.0	154	52.0
Female	25	50.0	142	48.0
Total	50	100.0	296	100.0
Age				
<30	2	4.0	173	58.4

30-49	22	44.0	72	24.3
50-59	19	38.0	36	12.2
>=60	7	14.0	15	5.1
Total	50	100.0	296	100.0
Place of birth				
Can Tho city	36	72.0	266	89.9
Northern provinces	12	24.0	20	6.8
Other provinces	2	4.0	10	3.4
Total	50	100.0	296	100.0
Marital status				
Single	1	2.0	159	53.7
Married	44	88.0	129	43.6
Widowed/Divorced	5	10.0	8	2.7
Total	50	100.0	296	100.0
Ethnicity				
Kinh	50	100.0	296	100.0
Language				
Vietnamese	50	100.0	296	100.0
Nationality				
Vietnamese	50	100.0	296	100.0
Religion				
Catholicism	50	100.0	296	100.0
Education				
Primary and lower	25	50.0	87	29.4
Lower Secondary	16	32.0	82	27.7
Higher Secondary	7	14.0	93	31.4
College/University	2	4.0	29	9.8
Not yet schooling	0	0.0	5	1.7
Total	50	100.0	296	100.0
Current occupation				
Small trade/service	1	2.0	12	4.1
Agriculture	44	88.0	99	33.4

Staff	1	2.0	35	11.8
Daily hired worker	3	6.0	25	8.4
Factory worker	0	0.0	34	11.5
No work	1	2.0	19	6.4
Student	0	0.0	72	24.3
Total	50	100.0	296	100.0
Previous occupation				
Small trade/service	4	8.0	15	5.1
Agriculture	41	82.0	100	33.8
Staff	1	2.0	28	9.5
Daily hired worker	4	8.0	22	7.4
Factory worker	0	0.0	37	12.5
No work	0	0.0	15	5.1
Student	0	0.0	79	26.7
Total	50	100.0	296	100.0
Living years at this commune				
<=10 years	0	0.0	18	6.1
11-20 years	0	0.0	118	39.9
21-30 years	3	6.0	50	16.9
31-40 years	9	18.0	27	9.1
41-50 years	22	44.0	42	14.2
> 50 years	16	32.0	37	12.5
Missing	0	0.0	4	1.4
Total	50	100.0	296	100.0

Table V2: Education level of 50 interviewees representing surveyed households and all members

Characteristics	Respondents/interviewees		Members	
	N	%	N	%
Education				
Primary and lower	25	50.0	87	29.4
Lower Secondary	16	32.0	82	27.7
Higher Secondary	7	14.0	93	31.4
College/University	2	4.0	29	9.8

Not yet schooling	0	0.0	5	1.7
Total	50	100.0	296	100.0

Table V3: Land ownership, agricultural activities, income and property of households

	Mean	Std. Deviation
HH residential land per capita (m2)		
20% lowest group	24.8	18.7
20% lower average group	79.1	4.0
20% average group	98.8	7.5
20% higher average group	145.9	14.1
20% highest group	279.7	116.0
Total	123.4	96.9
HH agricultural land per capita (m2)		
20% lowest group	418.7	155.7
20% lower average group	1259.1	151.1
20% average group	1845.2	194.2
20% higher average group	2798.9	322.7
20% highest group	11231.3	15170.1
Total	3442.2	7442.4
Agricultural activities		
Paddy production	49	98.0
Fishery	1	2.0
Others (pig, poultry, cow raising)	5	10.0
HH income per capita (mil./yrs)		
20% lowest group	0.8	0.6
20% lower average group	3.7	1.3
20% average group	6.1	0.3
20% higher average group	10.0	2.4
20% highest group	19.2	4.4
Total	7.9	6.9
HH property		

Tractor	1	2.0
Water pumper	2	4.0
Motorbike	44	88.0
Television	45	90.0

Table V4: Current Occupation and job of all members of 50 interviewed households (%)

Characteristics	Respondent/interviewee		Member	
	N	%	N	%
Current occupation				
Small trade/service	1	2.0%	12	4.1%
Agriculture	44	88.0%	99	33.4%
Staff	1	2.0%	35	11.8%
Daily hired worker	3	6.0%	25	8.4%
Factory worker	0	0.0%	34	11.5%
No work	1	2.0%	19	6.4%
Student	0	0.0%	72	24.4%
Total	50	100.0%	296	100.0%

Table V5: Environmental changes in community in the last 10 years

Environmental changes	Yes		No		Don't know	
	N	%	N	%	N	%
Increased extreme hydro-climatic weather	50	100.0	0	0.0	0	0.0
Irregular Flooding	34	68.0	16	32.0	0	0.0
More extreme warm weather	50	100.0	0	0.0	0	0.0
More extreme cold weather	15	30.0	34	68.0	1	2.0
Less rainfall	38	76.0	12	24.0	0	0.0
Drought	21	42.0	29	58.0	0	0.0
Desertification	50	100.0	0	0.0	0	0.0
Sea level rise	0	0.0	50	100.0	0	0.0

Table V6: Environmental changes in community in the last 10 years

	Yes		No		Don't know	
	N	%	N	%	N	%
Having a negative impact on life and production						
Your access to food	15	30.0	35	70.0	0	0.0
Your access to water	5	10.0	45	90.0	0	0.0
Water quality in your community	40	80.0	10	20.0	0	0.0
Soil quality in your community	34	68.0	16	32.0	0	0.0
Housing / infrastructure	29	58.0	21	42.0	0	0.0
Health	47	94.0	3	6.0	0	0.0
If you grow food/plants, your ability to grow / the	30	60.0	19	38.0	1	2.0
If you have livestock, your ability to support your	17	34.0	31	62.0	1	2.0
If you rely on fishing, your ability to fish / quantity	9	18.0	40	80.0	1	2.0
Lack of land available for farming / access to land	4	8.0	45	90.0	1	2.0
Access to fuel / energy	4	8.0	44	88.0	1	2.0
Biodiversity (e.g. seeds, plants)	3	6.0	46	92.0	1	2.0
Insects or pests in the area	30	60.0	19	38.0	1	2.0
Having a negative impact on income						
Your income / livelihood	47	94.0	3	6.0	0	0.0
Your quality of life	49	98.0	1	2.0	0	0.0
Your debt	31	62.0	19	38.0	0	0.0
Peace and security in your community	8	16.0	42	84.0	0	0.0
Local politics	0	0.0	50	100.0	0	0.0
Local relationships in the community	0	0.0	50	100.0	0	0.0
Economic development of your community	30	60.0	20	40.0	0	0.0
Employment of people in your community	34	68.0	16	32.0	0	0.0
Education of people in your community	22	44.0	28	56.0	0	0.0
Having a positive impact	12	24.0	38	76.0	0	0.0

Table V7: Statistical description of non migrants and migrants

	Non migrants		Migrants	
	N	%	N	%
Gender				
Male	99	50.3	55	55.6
Female	98	49.7	44	44.4
Total	197	100.0	99	100.0
Age				
<30	99	50.3	74	74.7
30-49	48	24.4	24	24.2
50-59	35	17.8	1	1.0
>=60	15	7.6	0	0.0
Total	197	100.0	99	100.0
Marital status				
Single	87	44.2	72	72.7
Married	102	51.8	27	27.3
Widowed/Divorced	8	4.1	0	0.0
Total	197	100.0	99	100.0
Education				
Primary and lower	74	37.6	14	14.1
Lower Secondary	61	31.0	21	21.2
Higher Secondary	45	22.8	48	48.5
College/University	13	6.6	16	16.2
Missing	4	2.0	0	0.0
Total	197	100.0	99	100.0
Current occupation				
Small trade/service	6	3.0	6	6.1
Agriculture	85	43.1	14	14.1
Staff	16	8.1	19	19.2
Daily hired worker	16	8.1	9	9.1
Factory worker	14	7.1	20	20.2
No work	16	8.1	3	3.0

Student	44	22.3	28	28.3
Total	197	100.0	99	100.0
Previous occupation				
Small trade/service	5	2.5	10	10.1
Agriculture	85	43.1	15	15.2
Staff	11	5.6	17	17.2
Hired worker	16	8.1	6	6.1
Factory worker	18	9.1	19	19.2
No work	12	6.1	3	3.0
Student	50	25.4	29	29.3
Total	197	100.0	99	100.0
Living years at this commune				
11-20 years	55	27.9	63	63.6
21-30 years	31	15.7	19	19.2
31-40 years	18	9.1	9	9.1
41-50 years	39	19.8	3	3.0
> 50 years	37	18.8	0	0.0
Do not remember	17	8.6	5	5.1
Total	197	100.0	99	100.0
Agricultural land per capita of non-migrants and migrants				
20% lowest group	47	23.9	11	11.1
20% lower average group	29	14.7	18	18.2
20% average group	37	18.8	30	30.3
20% higher average group	41	20.8	29	29.3
20% highest group	43	21.8	11	11.1
Total	197	100.0	99	100.0
Income per capita of non-migrants and migrants				
20% lowest group	48	24.4	13	13.1
20% lower average group	46	23.4	24	24.2
20% average group	30	15.2	15	15.2
20% higher average group	33	16.8	24	24.2

20% highest group	35	17.8	22	22.2
Missing	5	2.5	1	1.0
Total	197	100.0	99	100.0

Table V8: Demographic and socio-economic characteristics of migrants by destination

	Destination of migrants						(N)
	HCMC	Can Tho city	Lam Dong province	Dong Nai province	Others	Total	
	%	%	%	%	%	%	N (respondent)
Gender							
Male	63.6	5.5	12.7	12.7	5.5	100.0	(55)
Female	54.5	9.2	22.7	6.8	6.8	100.0	(44)
Age							
<30	67.6	9.5	12.2	5.4	5.3	100.0	(74)
30 - 49	37.5	0.0	33.3	20.8	8.4	100.0	(24)
50 - 59	0.0	0.0	0.0	100.0	0.0	100.0	(1)
Marital status							
Single	69.4	9.7	11.1	5.6	4.2	100.0	(72)
Married	33.3	0.0	33.3	22.2	11.2	100.0	(27)
Education							
Primary and lower	42.9	0.0	28.5	28.6	0.0	100.0	(14)
Lower Secondary	42.9	0.0	38.1	4.7	14.3	100.0	(21)
Higher Secondary	62.5	12.5	10.4	10.4	4.2	100.0	(48)
College/University	87.4	6.3	0.0	0.0	6.3	100.0	(16)
Current occupation							
Small trade/service	83.3	0.0	0.0	16.7	0.0	100.0	(6)
Agriculture	7.1	0.0	50.0	42.9	0.0	100.0	(14)
Staff	78.9	0.0	10.5	5.3	5.3	100.0	(19)
Factory worker	90.0	0.0	0.0	0.0	10.0	100.0	(20)
Student	53.6	25.0	14.3	7.1	0.0	100.0	(28)
Others	41.7	0.0	33.3	0.0	25.0	100.0	(12)
Total	59.5	7.1	17.2	10.1	6.1	100.0	(99)
(N)	(59)	(7)	(17)	(10)	(6)	(99)	

Table V9: Factors of Migration from Origin Community

	Main		Important		Normal		Little		No related	
	N	%	N	%	N	%	N	%	N	%
Environmental changes in origin	4	23.5	9	32.1	12	17.1	11	14.5	14	20.6
Low wages in origin	2	11.8	1	3.6	9	12.9	29	38.2	12	17.6
Lack of jobs in origin	7	41.2	8	28.6	33	47.1	17	22.4	17	25
Poor quality of life in origin	1	5.9	4	14.3	5	7.1	15	19.7	13	19.1
Lack of access to basic services (e.g. health) in origin			1	3.6			1	1.3		
Lack of access to education in origin			5	17.9	10	14.3	1	1.3	8	11.8
Health hazards in origin (e.g. poor air or water quality)	3	17.6			1	1.4	2	2.6	4	5.9
Total	17	100	28	100	70	100	76	100	68	100

Table V10: Factors of Migration from Origin Community

	Main		Important		Normal		Little		No related	
	N	%	N	%	N	%	N	%	N	%
Environmental changes in origin	4	23.5	9	32.1	12	17.1	11	14.5	14	20.6
Low wages in origin	2	11.8	1	3.6	9	12.9	29	38.2	12	17.6
Lack of jobs in origin	7	41.2	8	28.6	33	47.1	17	22.4	17	25
Poor quality of life in origin	1	5.9	4	14.3	5	7.1	15	19.7	13	19.1
Lack of access to basic services (e.g. health) in origin			1	3.6			1	1.3		
Lack of access to education in origin			5	17.9	10	14.3	1	1.3	8	11.8
Health hazards in origin (e.g. poor air or water quality)	3	17.6			1	1.4	2	2.6	4	5.9
Total	17	100	28	100	70	100	76	100	68	100

Table V11: Drivers of Migration from Destinations

	Main		Important		Normal		Little		No related	
	N	%	N	%	N	%	N	%	N	%
Education opportunities in destination	34	41.5	10	15.4	4	16	5	41.7	1	5.6
More jobs in destination	44	53.7	36	55.4	4	16	1	8.3		
Higher wages in destination	3	3.7	15	23.1	15	60	3	25	6	33.3
Better access to basic services (e.g. healthcare services) in destination			4	6.2	2	8	3	25	11	61.1
Networks (e.g. marriage / family) in destination	1	1.2								
Total	82	100	65	100	25	100	12	100	18	100

Table V12: Environmental changes and the related impacts contribute to future decisions to migrate

	N	%
Yes	25	50.0
No	25	50.0
Total	50	100.0

Table V13: Environmental change(s) likely to contribute to future decisions to migrate

	N	%
Increased extreme hydro-climatic weather	24	96.0
Flooding	17	68.0
More extreme warm weather	19	76.0
More extreme cold weather	4	16.0
Less rainfall	5	20.0
Drought	1	4.0
Total	25	

Table V14: Relevant negative impacts (related to environmental changes) likely to contribute to future decisions to migrate away from the origin community

Relevant negative impacts	N	%
Decreased access to food	4	16.0
Decreased access to water	3	12.0
Poor water quality (agricultural / domestic purposes)	17	68.0
Poor soil quality	12	48.0

Poor housing / infrastructure (e.g. buildings, roads, pipelines, electricity)	8	32.0
Poor health (e.g. disease, sanitation, mental health, death)	15	60.0
Decreased ability to grow crops / decreased quality or quantity of crops	13	52.0
Decreased ability to support your livestock	6	24.0
Decreased ability to fish / lower quantity of fish	1	4.0
Increased insects or pests in the area	3	12.0
Decreased income / livelihood	23	92.0
Decreased quality of life	21	84.0
Increased debt	14	56.0
Decreased peace and security issues in your community	1	4.0
Negative impacts on economic development of your community	4	16.0
Decreased employment in your community	4	16.0
Total	25	

Table V15: Community needs to cope with environmental changes

	Yes		No		Unsure	
	N	%	N	%	N	%
Government assistance in to safely remain in origin	26	54.2	22	45.8		
Safer housing and infrastructure in origin	13	27.1	35	72.9		
Access to loans/financial assistance	25	52.1	23	47.9		
Availability of different types of jobs and skills training in origin	30	63.8	17	36.2		
Access to insurance (home, life, health, income, social security) in origin	23	48.9	24	51.1		
Access to information regarding environmental issues	33	70.2	14	29.8		
Access to information regarding migration options	11	23.4	35	74.5	1	2.1
Government assistance to facilitate safe migration away from origin	8	17.0	38	80.9	1	2.1
Government policies changes	1	2.1	44	93.6	2	4.3
Others	23	59.0	14	35.9	2	5.1

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