



THE URGENT NEED TO PREPARE FOR
CLIMATE DISPLACEMENT IN MYANMAR

ESTABLISHING A MYANMAR NATIONAL CLIMATE LAND BANK

May 2018



DISPLACEMENT SOLUTIONS



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Cover image: Freshwater well formerly located in the village of Khin Dan, Myanmar, and now permanently inundated.



Myanmar's rapidly degrading coastline.

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EXECUTIVE SUMMARY

Globally three times as many people are now displaced annually because of extreme weather events and climate change than those displaced due to conflict, with the vast majority of those displaced living in developing countries, 81% of whom reside in Asia.¹ The movement and planned relocation of people and communities from their homes and lands necessitated by the effects of extreme weather events and climate change is rapidly becoming one of the greatest threats to the enjoyment of human rights and to broader concerns of peace and security in Myanmar.

Climate displacement from both extreme weather events and climate change are set to pose a particularly dramatic challenge for the people and government of Myanmar. According to one survey, the country is currently ranked second out of 187 countries in the Global Climate Risk Index for vulnerability to climatic natural disasters. Still reeling from the effects of Cyclone Nargis in 2008, a decade on the country remains worryingly unprepared for dealing with natural disasters and this will be only further compounded when considering the large-scale displacement of populations which may occur as a result of climate change impacts such as rising sea levels, coastal erosion and temporary or permanent inundation.² A recent report has predicted that sea level in Myanmar will rise by up to 50cm by 2050.³ Apart from some low-lying areas being permanently inundated, sea level rise will also affect season coastal flooding and storm surge intensity during cyclones and tropical storms. Additionally, rising salinity levels, salt water intrusion and ocean acidification will bring additional pressures to livelihood viability of local communities living in these effected coastal regions.

“...the country is currently ranked second out of 187 countries in the Global Climate Risk Index for vulnerability to climatic natural disasters.”

Given the scale of the crisis affecting Myanmar, the government needs to develop pro-active, appropriate preventative policies and capacities to specifically respond to climate displacement threats from both extreme weather events and future climate change. If not, millions of people may be forced to flee their homes and lands along the country's 2000km coastline. This potential displacement catastrophe is only further compounded when populations living along the country's many rivers and waterways are impacted as floodplains become increasingly uninhabitable, adding to the massive displacement that has already taken place due to decades of conflict and disaster. While it is clear that millions will be affected by climate change in the decades to come, there has been virtually no vulnerability mapping or planning in Myanmar to identify at risk communities from climate displacement, nor assessments of potential locations for resettlement. It is also not clear which, if any, targeted institutions, policies or programmes are in place to support these communities.

¹ Nansen Initiative, 'Climate change, cross-border displacement and human rights: is there a protection gap and will COP21 help close it?', 2015.

² Swe Set, 'Climate displacement and land solutions in Myanmar' in *Land Solutions for Climate Displacement* (Scott Leckie, ed), Taylor & Francis/ Routledge, 2014, pp. 251-267.

³ <https://pispaspeak.wordpress.com/2016/12/29/climate-change-and-sea-level-rise-in-asia-myanmar/>



A religious structure previously in the middle of Khin Dan village is now located on the beach due to rising sea levels.

The results of this study have led Displacement Solutions and Ecodev to believe that the government of Myanmar needs to fully recognise its national and international obligations regarding how best to protect the rights of climate displaced persons and communities in the country. In the process of doing so, the government should give serious consideration to the development of practical measures to mitigate community vulnerability through the design and establishment of a Myanmar National Climate Land Bank (MNCLB).

This report provides a summary of the findings from two preliminary case studies of communities considered potentially vulnerable to the impacts of extreme weather events and climate change in the Ayeyarwaddy Delta and Mon State of Myanmar. The results offer insights into how some of the dynamics of a MNCLB could work in Myanmar and other countries in practical terms to build community resilience and provide a foundation for a proactive national climate change adaptation strategy which protects everyone affected in a manner consistent with their fundamental human rights.

I. INTRODUCTION TO THE ISSUES: THE CONNECTION BETWEEN CONFLICT PREVENTION, HUMAN RIGHTS, CLIMATE CHANGE AND LAND – THE NEED FOR A MYANMAR NATIONAL CLIMATE LAND BANK⁴

1. Throughout all corners of the world it is increasingly recognised that voluntary planned relocation and the provision of land to those choosing to relocate can play a central role in resolving climate displacement in a rights-based manner that prevents land disputes and resultant financial losses.⁵ Those who can no longer remain in their homes due to rising sea levels and other extreme weather events obviously need somewhere else to go. Individual migration may be the preferred approach by some dwellers, however, a growing body of experience globally points to the fact that planned community relocation in response to climate displacement threat is the approach that many communities prefer and which stands the best chance of success for all concerned. For example, the planned relocation of such communities to new land is already underway in countries such as Bangladesh⁶, Panama⁷, the Solomon Islands⁸, and elsewhere where Displacement Solutions (DS) has worked directly with these communities to find concrete ways and means to resolve climate displacement through planned relocation.⁹
2. In Myanmar, historical and contemporary land disputes and displacement are already highly contentious issues and are likely to worsen as the effects of climate change increase across the country.¹⁰ In particular, without appropriate counter-measures and innovative policies, conflict over land is likely to increase as large numbers of people affected by rising sea levels can no longer remain in their homes along the country's lengthy coastline and seek to relocate to higher ground. If not managed properly, this process could all too easily result in tension, violence, and even new forms of conflict. Indeed, the UN High Commissioner for Human Rights, Zeid Ra'ad Al Hussein, has spoken of the 'stark and vital' implications of climate change for the full enjoyment of human rights, and the 'multiple implications' of climate change 'for displacement, statelessness, land-rights, resources, security and development.'¹¹

⁴ This paper was prepared by Scott Leckie, Shaun Butta and Nay Min Maung.

⁵ See, for instance, Scott Leckie (ed) *Land Solutions for Climate Displacement*, Routledge, 2014 and Scott Leckie, *Finding Land Solutions to Climate Displacement: A Challenge Like Few Others*, Displacement Solutions, October 2013.

⁶ See, for instance: Displacement and YPSA, *Bangladesh Housing, Land and Property (HLP) Rights Initiative: Climate Displacement in Bangladesh: Stakeholders, Laws and Policies - Mapping the Existing Institutional Framework*, July 2014.

⁷ See, for instance: Displacement Solutions, *The Peninsula Principles in Action: Climate Change and Displacement in the Autonomous Region of Gunayala, Panama - Mission Report*, July 2014.

⁸ See, for instance: Displacement Solutions (Beni Knight and Scott Leckie), *Climate Displacement in the Pacific - A Photographic Essay on Ontong Java, Solomon Islands - Visions from a Vanishing Atoll*, 2015; and Scott Leckie and Beni Knight, *Solomon Islands: Climate Displacement in Lau Lagoon, Solomon Islands*, Displacement Solutions, April 2017.

⁹ See: Scott Leckie (ed) *Land Solutions for Climate Displacement*, Routledge, 2014.

¹⁰ Samuel Schlaefli, *Is Myanmar ready for climate change?*, Myanmar Times, 11 November 2016.

¹¹ Press Conference by United Nations High Commissioner for Human Rights, Zeid Ra'ad Al Hussein, 16 October 2014 <http://ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=15173&LangID=E#sthash.szM1rhZS.dpuf>

3. The Myanmar Disaster Management Law (2013), the Myanmar Action Plan on Disaster Risk Reduction (MAPDRR), the National Recovery Framework and Plan for the 2015 Floods and Landslides Disaster (2016) and other norms have been adopted in recent years, but these do not explore in any detail the question of securing land resources for families and communities permanently displaced due to climate change. One publication explicitly notes that there has been insufficient support for sustainable planned relocation and that the government of Myanmar should “adopt policies for planned relocation and implement them at the local level through training and capacity building to ensure that planned relocation is fully consensual, respects the human rights of relocated individuals, and is accompanied by multi-year funding and support to ensure that relocated households are provided with safe and secure housing, land and access to livelihoods and services.”¹²
4. Among the key concerns of families either relocating or needing to relocate because of disasters or the effects of climate change, the lack of available sites for relocation is primary, as were the limited support available for rebuilding homes, challenges associated with accessing services and education and limited livelihood opportunities at relocation sites.¹³ Another publication points to the need for more research on the interplay between climate mitigation policies and their impacts on land acquisition.¹⁴ In policy terms, therefore, there is a pressing need in Myanmar to identify and allocate land at a level commensurate with the scale of present and likely future climate displacement in the development of domestic strategies and laws to address the problem. Such measures have been increasingly seen by analysts as the only feasible way by which the challenge of climate displacement can be addressed.¹⁵
5. The establishment of a **Myanmar National Climate Land Bank (MNCLB)** could act as the central institutional tool in this process. The aim of the MNCLB would be to set up land set-aside programmes of parcels of State land in a bid to prevent land conflict and resolve climate displacement in a rights-based manner throughout the country. The MNCLB would provide a basis for developing concrete policies that tie together five vital policy threads: conflict prevention, human rights, climate change, displacement and access to land. The central importance of land for security, stability and economic development is already well recognised by the present government and by civil society, which has commenced identifying State land resources for eventual distribution to landless rural poor households as part of broader land reform efforts. In this context, the establishment of the MNCLB would be a further element of broader land reform measures, which are already underway in the country albeit limited and in their nascence.
6. Without a MNCLB in place, the growing numbers of people facing displacement due to the effects of climate change will increasingly have nowhere to go and thus be forced, as climate displaced communities everywhere, into urban slums or new residential options that are wholly inadequate to meet their basic human rights requirements. Arguably, failing to act in policy and legal terms to address this merging crisis would clearly be contrary to a range of pre-existing legal commitments of the government of Myanmar, both under domestic law as well as under its international obligations generated, inter alia, by its 2017 ratification of the International Covenant on Economic, Social and Cultural Rights.

¹² Alice Thomas, *Accelerating Threats from Climate Change: Displacement and Disasters in Myanmar: Field Report*, Refugees International, December 2016, pp. 9 and 14.

¹³ *Id.*, 9.

¹⁴ Clemance Finaz, *A New Climate for Peace: Myanmar Country Risk Brief* (August 2015), p. 1.

¹⁵ For instance, a recent publication by Refugees International notes that “The Myanmar government...should develop policies, procedures and guidelines for planned relocation” and that “Members of the UN humanitarian country team in Myanmar providing support for relocation of disaster-displaced communities must develop joint internal guidelines for operationalizing their role. This should include working with the Myanmar government and development agencies to try to ensure that planned relocation is accompanied by comprehensive, long-term support and monitoring so that it is sustainable and does not increase vulnerability or protection risks. See: Alice Thomas, *Accelerating Threats from Climate Change: Displacement and Disasters in Myanmar: Field Report*, Refugees International, December 2016, p. 3.



Reinforcing a coastal sea wall
in Khin Dan village, Mon State, Myanmar.

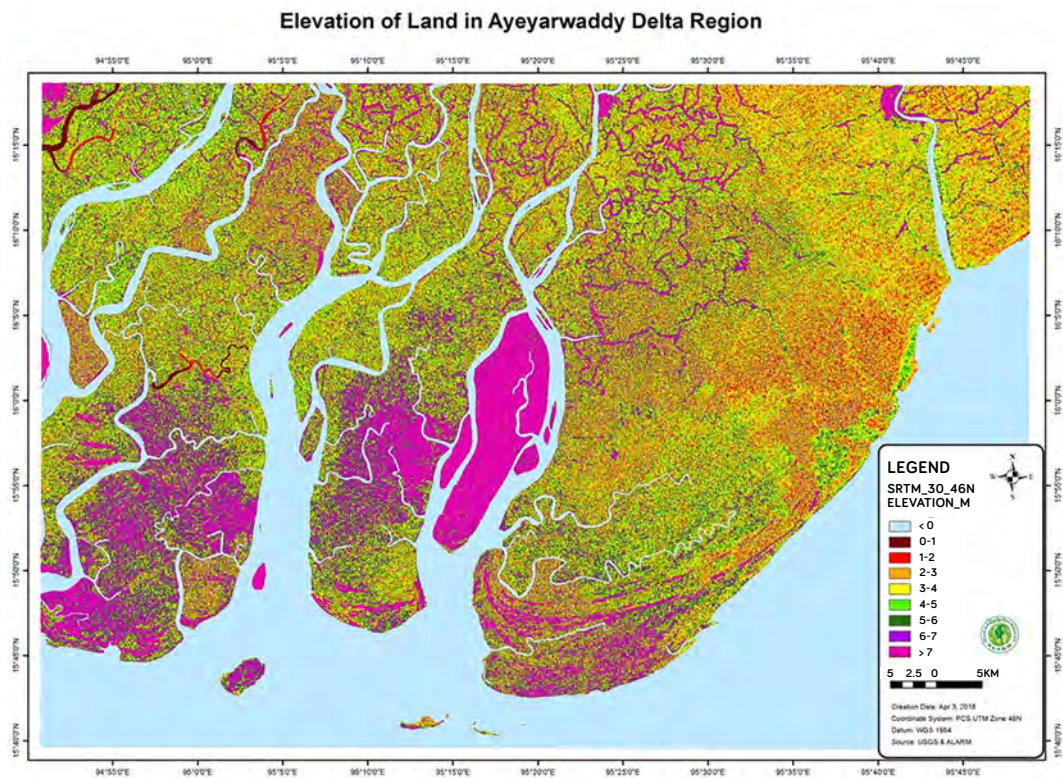
7. In practical terms, a MNCLB would act as a central repository or 'Land Bank' for State land that has been formally designated and held in trust exclusively for the use of climate displaced persons and communities needing to engage in voluntary planned relocation. Once established and placed under the democratic control of the most appropriate government ministry, the MNCLB would be entrusted with identifying viable State land resources in all climate vulnerable areas in the country which would then be earmarked and held in trust as relocation sites for coastal communities that have chosen to engage in planned relocation. The MNCLB would also be the lead agency for ensuring that climate displaced persons are able to obtain new homes and new lands on those plots and maintain government responsibilities in this regard.
8. Once a sufficient land base has been identified and classified, the MNCLB would then begin considering community requests for new land, in accordance with agreed procedures, from communities that require planned relocation because of the direct effects of climate change upon the viability of their present communities. Efforts would also then commence to access larger parcels of State land additional acres of land to be placed under the administration of the MNCLB.

II. AYEYARWADDY DELTA AND MON STATE CASE STUDIES: EXAMINATION OF THE FEASIBILITY OF A MYANMAR NATIONAL CLIMATE LAND BANK

9. In an attempt to document the urgent need for national debate surrounding the possible establishment of a Myanmar National Climate Land Bank a research team from Displacement Solutions and Ecodev initiated a joint research project to assess the viability of establishing a land bank through two case studies in the Ayeyarwaddy Delta and Paung Township in Mon State. The aim of the study was to gather input from several coastal and rural communities highly vulnerable to the risk of climate displacement. In these locations, the perspectives of coastal communities were sought regarding potential future population movements necessitated by extreme weather events and climate change as well as the effects of climate change on current living conditions.
10. In addition to gaining inputs from these communities regarding their attitudes toward possible population movements and climate change in general, the research team sought to develop a short overview of current livelihood opportunities, service provision in the areas, as well as the land tenure arrangements in place in the villages. Based on the input from these vulnerable communities, the team then attempted to assess the feasibility of, and interest in, organised population movements connected to a future MNCLB. The responses from the Delta and Mon communities are evaluated below as part of the feasibility assessment on the creation of a MNCLB.

AYEYARWADDY DELTA

11. In the southern delta, feasibility was assessed through key stakeholder consultations, focus group discussions with villagers (2 per village, involving a minimum of 10 individuals per group, chosen in a gender-sensitive fashion) and inputs from village and township authorities. Bogalay Department for Regional Development provided the governmental approvals required for travel into the southernmost regions of Bogalay Township and to the villages described in this report. The Bogalay Department of Agriculture and Land Management Statistics were also consulted in relation to arable land use and mapping throughout the delta.
12. In all of the villages visited for this study, people voiced concern about the impacts of sea level rise, seeing it as one of the main contributing factors that will impact on their ability to maintain current livelihoods with predicted future climate change. Although many villages are currently being impacted by increased beach erosion and storm surges in the monsoonal season the real impacts of global sea level rise are yet to be felt. For Myanmar sea level is predicted to rise 5-10cm by 2020 but is expected to rise 20-41cm by 2050 and increase to 37-83cm by the end of the century, with some models predicting a potential rise exceeding 122cm. **These increases combined with continued beach erosion causing local land subsidence could mean that large areas of the Ayeyr waddy Delta could be permanently inundated, displacing hundreds of thousands of people.**



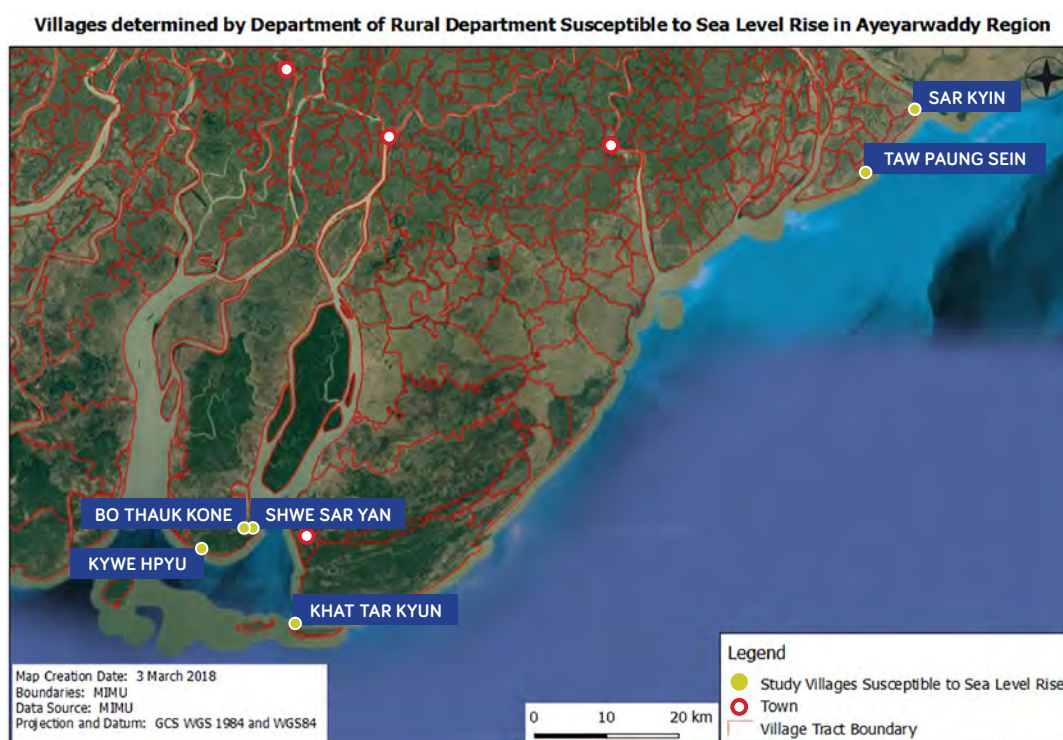
Elevation model for the Ayeyarwaddy Delta study area

13. Detailed sea level rise mapping will be essential in assessing the vulnerability of populations to climate displacement in the Ayeyarwaddy Delta and will form an essential part of establishing a Myanmar National Climate Land Bank. In an attempt to demonstrate the scale of areas that could be flooded and the potential number of people that will face climate displacement, Ecodev's GIS department has undertaken a preliminary analysis of the extent of low lying areas along a 268km length of coastline in the Ayeyarwaddy study area for this report. The study used the SRTM 1 DEM to extract topographic elevations and village track population data to estimate number of people that could be effected. The results show that in this area alone, potentially 12,620 ha could be permanently inundated by the end of the century with a population of approximately 25,000 to 40,000 effected.

Elevation_m	Area_sqkm	Area_ha
0 - 1	126.2	12,620.7
1 - 2	312.6	31,256.0
2 - 3	649.4	64,936.2
3 - 4	923.4	92,338.6
4 - 5	924.2	92,418.4
5 - 6	722.5	72,251.7
6 - 7	479.1	47,906.4
> 7	678.0	67,800.4

14. It is important to note that these predictions are likely to be estimates. The only available Digital Elevation Model (DEM) for Myanmar is the Shuttle Radar Topography Mission (SRTM) 1 Arc-second Global imagery flown in 2000. This DEM is of a 30m resolution and provides many limitations for mapping accuracy at small localised scales such as the Delta region of Myanmar. As the data set is at a global scale there exists small scale spikes and wells in the data set with regards to accurate elevation data for mangrove lined estuaries and water ways. As such the research team believes that the DEM over estimates elevation values for these areas and in fact greater areas could actually be effected by a 1m rise in sea level. For example, on the elevation map areas of mangrove habitat are currently reading as >7m in elevation but ground comparisons confirms that these areas are more likely to be <1m in elevation. This highlights the urgent need for investment by government to obtain more detailed digital elevation imagery for Myanmar to allow the fine scale vulnerability mapping that is required for natural hazard and climate change planning of the Delta region. This will be of significant importance for the government in identifying at risk communities from climate displacement, and assessments of potential locations for resettlement.
15. Methodological tools utilised in the Delta research included: seasonal calendars, resource mapping and histograms of the villages. The histograms involved diverse members of the villages creating a pictorial representation of the history of the village over four different time periods including: 20 years prior, ten years prior, present day and predictions of five years into the future. These representations were analysed in conjunction with the focus group discussions (FGDs) feedback and interviews. Seasonal calendars were utilised to establish the various agricultural and religious activities throughout the different periods of the year. Resource maps were constructed to establish a picture of the resources available to the population of the villages. For the Bogalay field work, the research team was provided a list of potential villages which, in the regional government's view, are most at risk of climate change impacts. The two villages selected for this study are located in close proximity to one another, on either side of several

acres of paddy fields in the Bogalay Township. Boe Thauk Khone (also known as Mo Lauk Kone) is located on the left of the paddy fields and Shwe Sar Yan to the right. Shwe Sar Yan is divided into two sections. The easternmost part of the village is fronted by the Bogalay River and the south of the village is adjacent to the shoreline on the Bay of Bengal. The western section of Shwe Sar Yan also has an area of coastline on the Bay of Bengal along its southern edge. The western and eastern parts of the village are separated by a mangrove swamp. Boe Thauk Khone has no water frontage and is the triangular area on the left, adjoining the rice paddy between the two villages. Both villages are administered by village headmen.

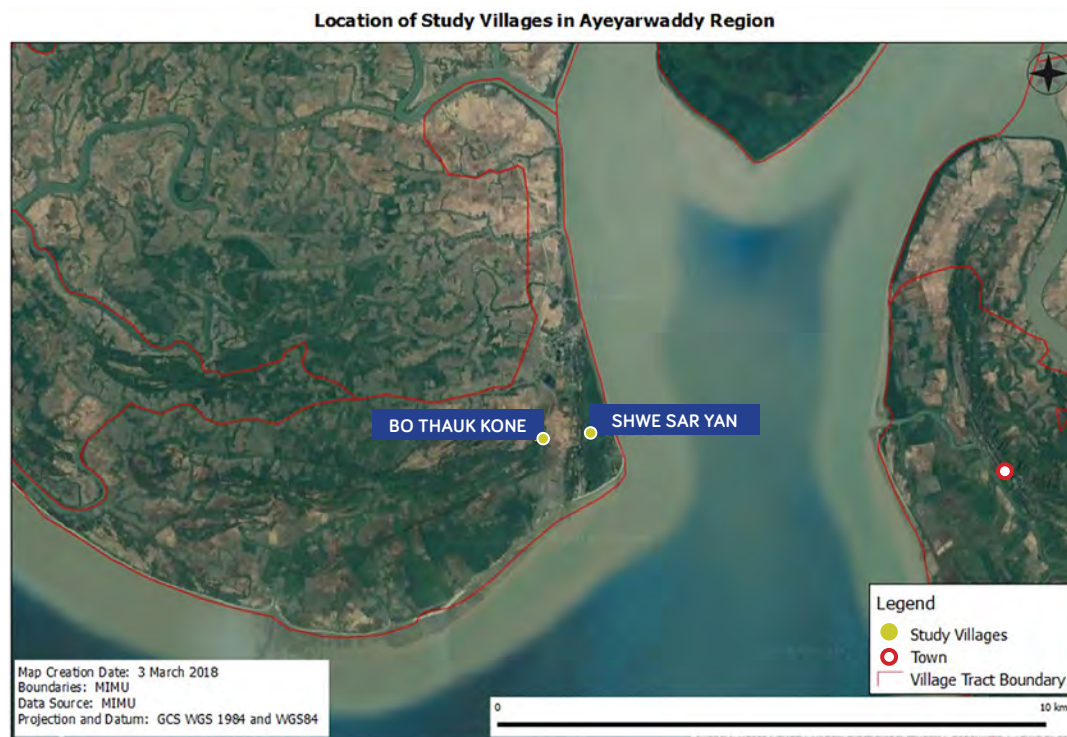


VILLAGES WHICH WILL BE FLOODED DUE TO SEA LEVEL RISE AS SUGGESTED BY DEPARTMENT OF RURAL DEVELOPMENT (DRD) IN AYEYARWADDY REGION

No	Township	Village Tract	Village	No. of Households	Population
1	Pyapon	Bawa Thit	Khitta Kyun	237	1112
2	Bogale	Kadon Kani	Shwe Sar Yan	165	718
3	Dadaye	Taw Chike	Taw Paung Sein	145	552
4	Bogale	Kadon Kani	Boe Tauk Khone	33	123
5	Dadaye	Toe	Sar Kyin	300	1774
6	Bogale	Kadon Kani	Kywe Phyu	129	527

SHWE SAR YAN

16. Shwe Sar Yan village is comprised of 165 households (718 individuals). The majority of the residents are of Bamar ethnicity, with a small minority of Kayin (Karen) and Rakhine families. There are also 100-household headmen, who represent clusters of 100 households. During the days when the research team visited, both village headmen were indisposed and interviews were only able to be held with 100-household headmen. A Shwe Sar Yan histogram exercise with community members revealed that over the course of the past 20 years, up to the present time, there has been a general increase in household numbers. However, in the coming five years, the population is expecting to see a decrease in population numbers due to out-migration, as people leave the village in search of jobs. It is not possible to ascertain from the histogram alone where the majority of people have gone, however, in the focus group discussions the usual places mentioned were the nearby town of Kadon Kani, the township centre of Bogalay and the economic hub of Yangon. The histogram also reflected that there has been an increase in the aged population, children residing in the village and a concomitant lowering of numbers of working-age adults; likely a reflection of the phenomenon above.





Shwe Sar Yan Histogram (constructed by a cross section of 10 villagers)

17. In terms of the agricultural output of the village, community members noted that over the past 20 years rice paddy production has been in a steady state of decline, and that villagers expected this trend to continue over the coming years. Regarding livestock, there were no significant changes other than a general decrease, since livestock were lost during Cyclone Nargis in 2008 and were unable to be replaced due to high costs. In relation to infrastructure, the histogram showed that roads and electricity supply have both improved over time. Water sources and natural resources (forest products etc) are expected to decline in the coming five years. This related specifically to the loss of access to freshwater wells, due to increasing salination levels. The villagers indicated that Nargis also increased the salt levels in the wells. There has been a general increase in the village children attending schools, however, the price of attendance is increasing and the village is expecting that less children will be able to attend school (either in the village or in nearby Kadon Kani) in future. Over the past two decades the health situation has improved, and that trend is expected to continue, however, the costs of healthcare are increasing. Forested area in and around the village has been decreasing, in part because the villagers use the trees for housing supplies and firewood. This has naturally led to an expectation of reductions in forested area in the next five years. The varieties of tree species in the village have, therefore, decreased over time. The villagers noted specifically that there are less coconut palms in the area.



This was said by the villagers to have occurred at an increased rate over the past three years. Forest products were also said to be decreasing over time and this was also expected to continue in the coming five years. The villagers specified bamboo and hardwoods like *Thamae* and *Thamaung*, which are used for housing construction, as the types of products which have notably diminished. As with the forest products and variety of vegetation, the types and quantity of forest animals, notably wild cats, pigs, and crabs were all said to be decreasing over time. In relation to weather patterns, sunny days, precipitation days and quantity of rain were all represented as increasing over the past 20 years and were expected to continue into the future 5 years. Natural disasters, predominantly cyclones and related flooding, were represented pictorially as having been present for the whole time frame and these were expected to persist into the future. Fishing activity has increased and is expected to continue as the price of fish rises. 20 years ago, a single fish cost MMK100, ten years ago MMK 800, present-day MMK 3,000, and five years into the future the price was predicted to be MMK 5,000.

18. The group that constructed the histogram for Shwe Sar Yan carried out a discussion of changes within the village over the 20-year time frame highlighting the negatives, positives and potential for mitigation strategies into the five-year future time frame. Negative developments identified included the fact that paddy land and village land has been lost over time due to the rising sea level. One farmer in particular has lost land near the shoreline that was previously home to bamboo stands. Water resources are declining and less livestock is being raised. Less opportunities exist for daily labour jobs in the village. Drinking water is decreasing as the wells are becoming salinated; even though the precipitation is increasing, the storage capacity is not large to take advantage of that change. There are decreasing amounts of forest animals, and a perceived increasing frequency of extreme weather events and increased out-migration.
19. Conversely, in terms of improvements, the villagers noted that: Infrastructure is improving (particularly roads); Increased population ("more Buddhists"); Paddy price is increasing (despite overall production going down); New energy sources are increasingly available, in particular solar; Quality of schooling is improving and Fishing materials are more modern, leading to an increase in catch-yields. The community also identified several potential mitigation strategies for the future, including: Deforestation – reforestation, conservation of tidal mangrove forest on the eastern side of the village – the community would request government to do that because it is government land; Livelihoods – begin fish and prawn farming; Improved community knowledge about fishing laws and reduction in catches to conserve fish stocks; Drinking water – construct lakes to catch and preserve drinking water from precipitation; and Natural disaster preparation – listen to Department of Meteorology alerts regarding storms.

20. The FGDs conducted in Shwe Sar Yan reflected a relatively settled population with some degree of out-migration necessitated by the need to find alternative livelihoods in bigger economic zones. Of the settled populations, the majority of the people are engaged in rice farming as labourers and are supplementing incomes with fishing activities during the times when rice agriculture is not an option. Small business activities provided supplementary incomes as well (selling vegetables, motorbike taxis, day labour). The majority of people do not own rice paddy land. However, most people claimed to own their own houses and the land underneath their houses. Formal tenure and documentation was close to non-existent among this population with only one person out of 23 participants having a tax receipt for land. None of the participants had a Land Use Certificate (as recognised within the 2012 land laws), reflecting a situation of customary tenure in the village regarding land management practices. Anecdotally, women's access to HLP rights appeared to be relatively strong in that women were said to be able to own land independently and to inherit, however, it must also be borne in mind that all decision makers and dispute resolvers in relation to the village land management are male.

MR SOE LWIN - RICE FARMER IN SHWE SAR YAN

During the course of the visit to the barrier that the local authorities have erected to protect the Shwe Sar Yan and Boe Tauk Khone village lands from salination and flooding, an interview was held with Mr Soe Lwin, a local ethnic Bamar rice farmer. Soe Lwin is 53 years of age and was born and raised in Shwe Sar Yan. His family has lived in Shwe Sar Yan for 3 generations and he owns the paddy fields which are the closest to the sea of any resident in the two villages.

Soe Lwin's main occupation is rice farming; he is a land-owner and also works in the paddy fields. Over the course of his life, he has witnessed erosion of the coastline, which has resulted in the high-tide level growing closer to his paddy fields over time. As evidence of the impact of erosion on his land, Soe Lwin cited the disappearance of guava, betel, seasonal vegetables, water greens, lettuce, mango trees, bamboo stands and coconut palms along the beachfront adjacent to his property. He also mentioned that the other major impact of climate change over the years has been the increased salination along the front of his property near the coastline. Originally, Soe Lwin owned 15 acres of paddy, but due to erosion and salination from the ocean, he has lost 11 acres of his arable land.

A clay barrier was erected from paddy field mud in 1993 by the villagers themselves for free to protect his land. This barrier lasted until it was destroyed by erosion in 2014. Due to the erosion and the construction of the new barrier (which requires material from the field and reduces the land size), Soe Lwin now only has four acres of arable paddy fields left. A new barrier was put up by the Department of Irrigation (which is under the Ministry of Agriculture, Livestock and Irrigation) in March 2017. Back when Soe Lwin owned 15 acres, it required around 75 labourers from the village to plant and harvest the rice. Those jobs are now gone, forcing those people to move to other locations such as Yangon, to seek day labour jobs during the monsoon. About 25 people had to leave Shwe Sar Yan and others were forced to seek day labour jobs in the surrounding area.



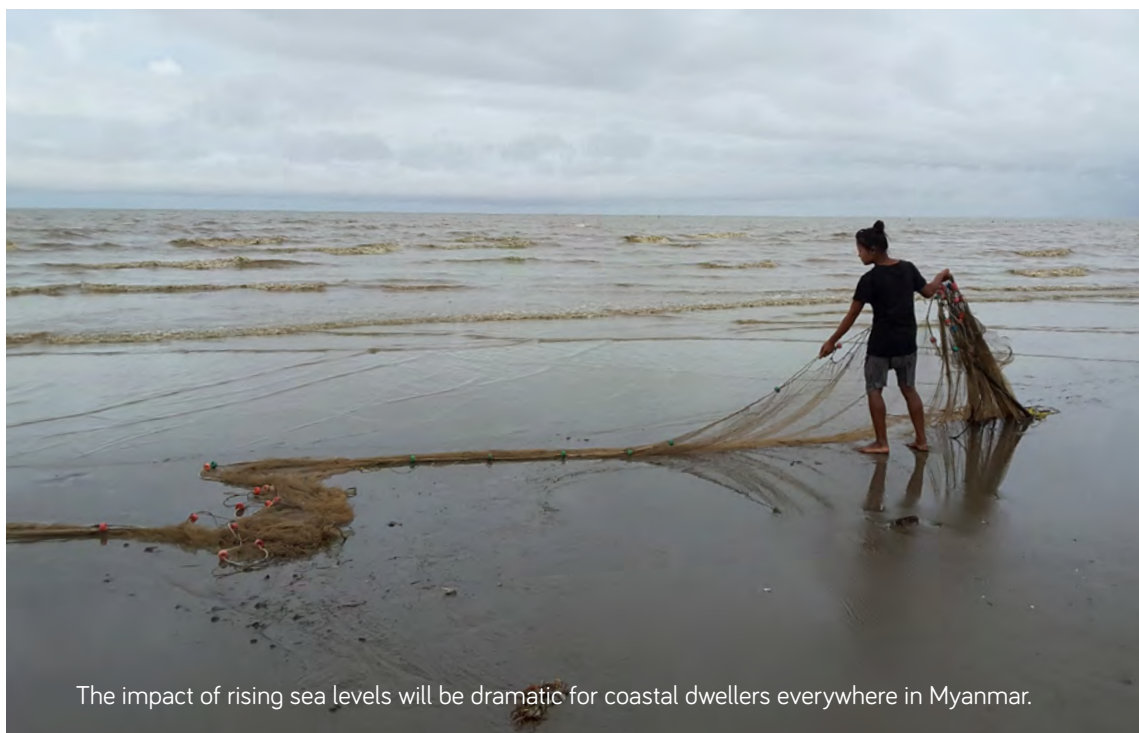
100-Household Headman of Shwe Sar Yan village, Mr Kyaw Oo, demonstrates where water levels were on the bamboo supports of his small shop after the initial Nargis water surge subsided.

During cyclone Nargis, half of the original barrier was destroyed as the water went inland to Kadon Kani, the nearest big village. During the next three years, the paddy fields were unusable due to the salt content. Soe Lwin was forced to grow seasonal vegetables for that period, until the soil returned to normal levels of salination. Soe Lwin says it would be difficult to survive another storm of that size, in terms of supporting livelihoods for another 3 years, while land regenerates to productive levels. Soe Lwin said “I would consider moving to a new area, but the government would need to offer alternative livelihoods. Also, the ownership of the new land would be important as well”. Soe Lwin is one of the only members of the village to have tax receipts for his land. He says he also applied for a Land Use Certificate (also known as Form 7) for his land from the Department of Agricultural Land Management and Statistics (formerly SLRD), but is yet to receive any certification since 2016. In 2013, Soe Lwin had to apply to reclassify the land from forest land to farmland under the 2012 laws.

He is currently awaiting the issuance of a LUC/Form 7 from the 2016 application. Soe Lwin says that if he were to move in future, the government would have to confirm that he would receive similar certification for new land. The cost of transportation to another location would also be a consideration. Furthermore, because he has children at school in Kadon Kani, education and health services would also be an issue. According to Soe Lwin, these are the determining factors before considering a move to a new location, even if the available land was far away from the present location.

21. In relation to climate change, the biggest changes observed by the groups in recent years has been a perceived increase in flooding, soil erosion at the beach area and loss of horticultural land. In response to the question of what presents the biggest danger to these communities, cyclones were identified as the biggest risk, over and above sea-level rises which were currently perceived to be minor. It should be noted that a majority of participants were living in the village during Nargis and this appeared to be a critical event in the lives of most respondents. In terms of adaptation to increases in these risk factors, participants suggested that moving to the nearby town of Kadon Kani would be one option, although others suggested that it would be neither feasible to move and that additionally it would not be possible to adapt to new risks at the current location (adaptation in this case meaning a raising of the height of housing). When asked what their biggest concern would be if there were no alternative but to relocate, the unanimous response was that livelihoods (and consequently income) was the single biggest concern. Without assistance in this realm, the participants were reluctant to consider the possibility of moving at all. Regardless, the suggestion that adaptation may not be possible, and that there may be no option, the participants maintained that they would stay as long as possible and that additionally this was partly due to the fact that they were living in the area where their ancestors lived before them. As a practical matter, they identified that it would be difficult for the elderly, children, pregnant women and the disabled to move to new locations.

When given the hypothetical situation of moving with support from authorities and provided access to livelihoods, participants suggested that they would have no major concerns with the idea in principle. However, they stressed that their overriding concerns are livelihoods, plus access to education for children and health services for the elderly. If these were guaranteed, then they would be interested in the idea. Any security of tenure in a new location was seen as better than what most experience at the moment.



The impact of rising sea levels will be dramatic for coastal dwellers everywhere in Myanmar.

MR KYAW OO, 100-HOUSEHOLD VILLAGE HEADMAN IN SHWE SAR YAN

Mr Kyaw Oo, is a 52-year-old fisherman of the Bamar ethnicity, who lives in the eastern part of Shwe Sar Yan, flanked by the Bogalay River on the east. Kyaw Oo related that the population in the village was mostly permanently settled, with a minimal amount of migration into and out of the village. In his part of Shwe Sar Yan, closest to the river, most of the villagers are fisherman whose catch is traded mostly in the larger nearby town of Kadon Kani and occasionally Bogale Town.

During Thadingyut (the end of Buddhist lent, usually around October), the residents tend to focus on raising pigs and ducks for consumption, when conditions aren't suitable for fishing. In terms of extreme weather events, most of the current residents in the eastern part of Shwe Sar Yan were living in the village during Nargis and the impact of the cyclone affected the attitude of the residents considerably. Kyaw Oo explained that the water levels were about a metre higher than the normal high tide level and the levels stayed that way for a longer period than the normal high tide. Following the interview, Kyaw Oo demonstrated for the team where the water levels came to on the bamboo poles supporting his small shop several hundred metres inland from the beach.

According the 100-household headman, the villagers have not noticed any changes in the general sea level, however, due to the memories of Nargis, the residents are now more concerned about extreme weather events. Due to these fears, Kyaw Oo said that the residents have plans to move important buildings, such as the monastery, further inland. Kyaw Oo was questioned regarding his thoughts about the possibility of finding land for a land bank in the surrounding area, however, he expressed doubts about the availability of arable land at higher elevations in the area. He suggested that most of the land around the area is at low elevations and wouldn't be necessarily safer than that which is currently being used. As a result, the team queried what the effect would be "if the only government land available was far from the current village location, like around Pyapon¹⁶, for example?" Mr Kyaw Oo was of the impression that above other considerations, safety is the most important thing for the communities, especially those who remembered the effects of cyclone Nargis.

Therefore, even if land was provided by an eventual land bank was located far from the current location, villagers would likely still be interested to move and adapt to new livelihoods. Kyaw Oo provided information on the tenure situation, especially as it relates to women and HLP rights in the village. He said that if a man passes away, the ownership of the house passes to the woman, in the case of a married couple. If there is a divorce, the land is shared between the two, and if there is any conflict in that situation, the village headman will resolve the issue. It would be possible for the woman to sell her half of the house in such a scenario. *Prima facie*, this reflects a reasonably strong position in terms of the ability of women to access and protect their HLP rights, however, the presence of women in roles of authority and decision-making in relation to HLP disputes should not be discounted, as noted earlier. Research suggests that globally, and in Myanmar specifically, women do not tend to have equal representation in formal or customary decision-making

¹⁶ Approximately 80km away from Shwe Sar Yan.



Migrant worker dwellings built on land abandoned by the residents of Khin Dan village due to rising sea levels.

bodies and it would be difficult to suggest that they therefore have unimpeded access to and protection of their HLP rights. In relation to the issue of land ownership and documentation, the headman suggested that most landowners resided within the village (this question was directed at seeing if the paddy land was owned by absentee landlords who lived in cities, as had been intimated by interviews with the DRD staff). The understanding of Kyaw Oo, was that nobody was in possession of any documentation related to who owned which plots of land within the village. Most knowledge of who owns different plots resides with the village headman (not the 100-household headman) and there are no pictorial representations of ownership in the village (such as cadastral/kwin maps seen in formal systems). The village headman was also identified as the responsible party for resolving any issues related to land ownership and use.

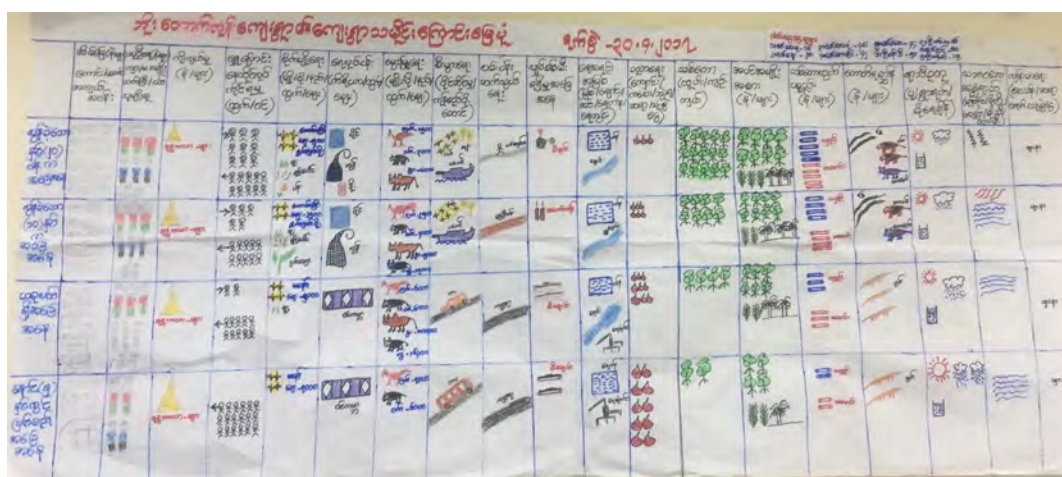
The team asked Kyaw Oo what he thought the impact would be on the main livelihoods in his part of the village (fishing) if there was a rise in the water levels in the area. His response was that fishing would be more difficult if the water level rose, especially if the currents were stronger, as the nets currently used are only for shallow, still water. He suggested that if current livelihoods become untenable due to climate change, that there was some possibility of adaptation to alternative livelihoods, like trading or opening shops etc. Again, though, Kyaw Oo took the time to point out that the biggest concern, in his opinion, for the villagers in the area was not lack of, or changing livelihoods, but that of physical safety.

When he was asked if he himself would be interested in moving away from the village, he indicated that if it became too dangerous to stay, he and his family would want to move, but that they would try to do that as late as possible, because the sea provides the best livelihoods in his part of the village. When Mr Kyaw Oo was asked if he would consider moving if he could have the same livelihood options in a new location, he suggested that it would be more likely that the population would have to adapt to new livelihoods. Noting that the houses near the Bogalay River, including the house of Kyaw Oo, were built on short stilts, the team asked him whether some adaptation would be possible, by raising the houses further off the ground, to mitigate against rising water levels.

The response was that adaptation of the housing is difficult because the bamboo structures cannot support housing being raised further than current heights (about 500mm maximum). Moreover, the winds are too strong during monsoon season to have the houses higher off the ground, as they would be susceptible to being blown over. That means that the only viable mitigation strategy apart from leaving the area is to move further inland in search of higher ground (which as mentioned earlier, is difficult to find within the confines of the delta region).

BOE TAU KHONE

22. The DS and Ecodev team also met with local authorities in Boe Tau Khone, including village headman, education committee and land committee. Similar to Shwe Sar Yan, the histogram for Boe Tau Khone also reflected a perception among villagers that household numbers have been decreasing over time from 20 years ago to the present moment and they expected that the trend will continue, into the future five year period. As such, the perception is that the population is steadily decreasing. There was also a belief that migration into and out of the village had also decreased over time. There were multiple crops grown in Boe Tau Khone, including rice paddy, gourd, roselle and other flowers to sell, as far back as 20 years ago. However, ten years ago flowers were replaced by banana plantations. Presently, only paddy and gourd were being grown in Boe Tau Khone and the villagers expected that in the next five years, the situation would remain the same as at present. Fishing as a means of livelihoods continues traditionally, however, the materials have changed from fishing nets to only crab pots over time.



Boe Tau Khone Histogram (constructed by a cross section of 10 villagers)

23. Transport infrastructure has improved over time, meaning that transportation has changed from using boats 20 years ago, when moving goods to Kadon Kani, to the present where cars and buses provide the main means of transportation. Visitation to the larger nearby town of Kadon Kani is also mainly by car and this is expected to continue in the future. Lighting sources 20 years ago were mainly oil lamps. These were replaced around ten years ago, by candles, and at the present moment, solar power is the main source of lighting and this is expected to be the case five years into the future as well. Water resources in the village have not changed much over time; 20 years ago, the well and the river were the main water points. Around ten years ago, a freshwater reservoir was added to these two sources and this situation remains today, with the addition of pumps for pumping ground water when available. Costs of education are rising for the villagers. Forest area was said to be decreasing over time, as were the types of trees that were seen in and around the village to the present, where there were only coconut trees and bamboo remaining. Mangos were lost in the village between 10-20 years ago. Forest products including hardwoods such as Thamae (*Avicella Officinalis*) and Thinbaung (*Phoenix paludosa*), were thought to be decreasing over time and it was expected that there would be no Thinbaung left five years from now. Forest animals present 20 years ago included snakes, pig, cats and dogs. Around ten years ago, there were only snakes and at present, only monitor lizards are to be found in the forest,

and this was expected to be the same in the future. Villagers believed that the temperature and the amount of precipitation has steadily increased over the past 20 years, and expected this to continue. In terms of natural disasters, flooding was a recurrent event. However, in the present and future periods, both cyclones and flooding were expected to be the major issues for the village.

24. The group that constructed the histogram for Boe Tauk Khone provided an overview of changes within the village over the 20-year time frame highlighting the negatives, positives and potential for mitigation strategies into the five-year future time-frame. Negative changes included views that: paddy production has reduced due to increased salination of the soil; even though there are salt resistant crop strains, the salt levels are too high even for those; population is declining; deforestation is increasing; and there are decreasing amounts of livestock. Positive changes including improvements in transportation, solar lighting and better education conditions, while mitigation strategies included training on livestock raising and reforestation measures.
25. The seasonal calendar produced by the Boe Tauk Khone villagers was the same as that produced in Shwe Sar Yan, but this village also grows long bean and peas in February-April;





Houses built in the mangrove swamps which help prevent coastal erosion on the eastern side of Shwe Sar Yan village.

26. The FGDs conducted in Boe Tauk Khone reflected a relatively settled population, however, this conflicted slightly with the histogram that showed a small degree of population movement into and out of the village. Of the resident population, the majority of the people are engaged in rice farming as land owners and labourers and to a smaller degree than those in Shwe Sar Yan, are supplementing incomes with fishing activities during the times when rice agriculture is not an option. This is likely reflective of the fact that this village has no direct beachfront access. Small business activities such as opening a shop in the village were cited as the main alternative or supplement to farming and fishing activities. A higher number of participants in the FGDs owned rice paddy land than in Shwe Sar Yan, again, possibly as a result of living further away from the sea. Most participants claimed to own their own houses and about half said they owned the land underneath their houses. Unlike the situation in Shwe Sar Yan, just under half the participants in Boe Tauk Khone had tax receipts for land. Once again, however, none of the participants had a Land Use Certificate under the 2012 land laws, reflecting a situation of customary tenure in the village regarding land management practices. According to the group, women's access to HLP rights appeared to be relatively strong in that women were said to be able to own land independently and to inherit. This was evident to a degree by the number of women in the group being sole owners of paddy land. Again, however, this assessment of women's HLP rights should be caveated by the fact that all decision makers and dispute resolvers in relation to the village land management are male, was the case as well in Shwe Sar Yan.

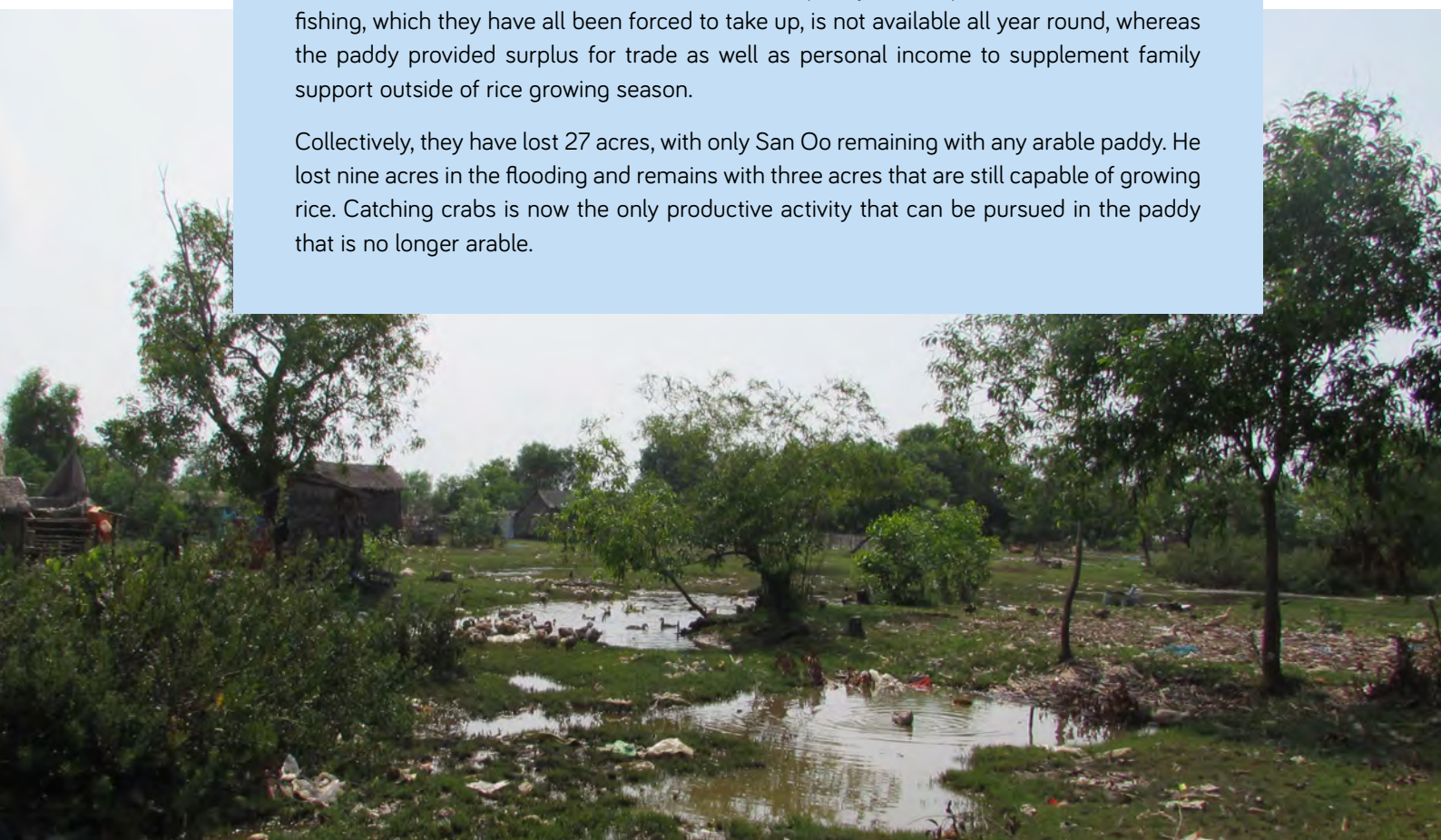
U SAN OO, YIE YIE NAING, DAW SOE BA AND DAW MOE MOE KAING FROM BOE TAU KHONE VILLAGE

During the Boe Tau Khone visit, the team spoke to four farmers in the village who were previously paddy farmers: U San Oo (m), Daw Yie Yie Naing (f), Daw Soe Pa Pa (f) and Daw Moe Moe Kaing (f). All four are current or former rice farmers, in 40-50 years age range, married and with multiple children. U San Oo has three children; the youngest is currently going to school but the oldest two had to stop going after cyclone Nargis struck the village.

He has tax receipts for his land, which is rare in the village, based on the responses in the FGDs. San Oo has tried to get a Land Use Certificate/Form 7 for his land, but he has been unsuccessful and is still waiting for a response. All of the farmers hold their land under customary law, like the vast majority of the other landowners in both villages. Daw Yie Yie Naing has four children now aged, 23, 20, 17 and 4.

All four children had to stop going to school after cyclone Nargis, due to paddy loss and inability to pay fees. Daw Soe Pa Pa has one child who also had to stop going to school for about four years. Daw Moe Moe Kaing has six children aged 24, 21, 16, 14, 10 and 7. The oldest three were forced to stop going to school following cyclone Nargis. Each of these farmers has a similar story, in that they were the owners of the land closest to the ocean in Boe Tau Khone village. As a consequence of cyclone Nargis, seawater flooded inland and the high concentration of salt destroyed the productivity of their plots. The paddy fields that they owned have never recovered from that event, meaning that these families have lost the income that was formerly generated by the yearly rice crop. This has had a direct impact on their ability to pay school fees for the children and each of the families has had to withdraw children from schooling as a result. Life in general has become much more difficult because of the loss of income from the paddy. The replacement income from fishing, which they have all been forced to take up, is not available all year round, whereas the paddy provided surplus for trade as well as personal income to supplement family support outside of rice growing season.

Collectively, they have lost 27 acres, with only San Oo remaining with any arable paddy. He lost nine acres in the flooding and remains with three acres that are still capable of growing rice. Catching crabs is now the only productive activity that can be pursued in the paddy that is no longer arable.



When asked their thoughts about moving to a new area if climate change affected their livelihoods negatively in future, all four seemed to think that it would be feasible to move, but that there would be clear requirements that would have to be met in order for such a move to be a positive development.

All four were unanimously in favour of being offered Land Use Certificates if they were to move to any new location in order to secure land tenure as part of the move. In addition, the other high priorities were those of livelihoods and shelter. All had children who were attending school in the village at the primary level and some were attending the secondary school in the nearby village of Kadon Kani. This village is also host to a health care centre which is vital to the Boe Tauk Khone residents. The four interviewees pointed out that these services of health and education were vital to any consideration of moving location, in addition to the issues of land tenure and livelihoods availability. Lastly, the group concurred that although these were the main considerations to weigh-up in any potential move, the main point to note is that there would be no deliberations about moving until the situation in the village becomes untenable. This reflected feedback from the FGDs in general, that a move would not really be contemplated until it was no longer possible to stay in the village.

27. In relation to climate change, the biggest changes observed by the groups in recent years was a perceived increase in extreme weather events and patterns (more heat/more rain), flooding and strong winds. In response to the question of what presents the biggest danger to these communities, cyclones and also tsunamis were identified as the biggest risks, over and above sea-level rises which were perceived to be minor. In Boe Tauk Khone as is Shwe Sar Yan, the majority of participants were living in the village during cyclone Nargis and this appeared to be a critical event in the lives of most respondents. In terms of adaptation to new livelihoods in a new location, the participants suggested that this should be possible in principle. In terms of adaptation *in situ* in the face of increases in risk factors, participants suggested that it would not be possible to adapt to new risks at the current location and that moving would be inevitable. Regarding whether they expected that they would have to move eventually, the participants provided a range of responses from not expecting to move because they had no real desire to move (because of the current location being an ancestral home) to those who thought that climate change would eventually force them to move against their will.
28. When asked what their biggest concern would be if there were no alternative but to move, the responses included land ownership issues, livelihoods, transportation costs, medical services, difficulties for children, pregnant women, older people and the sick. Without assistance in this realm, the participants were reluctant to consider the possibility of moving at all. Regardless the suggestion that adaptation may not be possible, and that there may be no option, the participants maintained that they would stay as long as possible and that additionally this was partly due to the fact that they were living in the area where their ancestors lived before them. As a practical matter, they identified that it would be difficult for the elderly, children, pregnant women and the disabled to move to new locations. When given the hypothetical situation of moving with support from authorities and provided access to livelihoods, participants overriding concern is livelihoods. If assistance was forthcoming from the government in the provision of alternative livelihoods, then there would be more interest in the idea.

INTERVIEW WITH U TUN KYAING, BOE TAU KHONE 100-HOUSEHOLD VILLAGE HEADMAN

U Tun Kyaing is a 66-year-old Bamar farmer and fisherman, who has lived his whole life in the village of Boe Tau Khone. His main livelihood is growing rice, but he also owns coconut trees. According to Tun Kyaing, 123 households in the village are of the Bamar ethnic group with only one household of Kayin people. He says that the population of the village is quite stable, although around three complete households have moved to Yangon in recent years in search of other livelihoods. He estimated the size of the village at around 205 acres which includes both rice paddy and horticultural lands. When asked about the documentation of the paddy fields he claimed that there are no people in the village with Land Use Certificates and that all villagers held their land under customary law. Much like the situation in Shwe Sar Yan, according to the 100-household headman, there were no observable barriers to women holding HLP rights in the village. While rice paddy was the main occupation in the village, those that don't hold property for rice paddy worked on the land of others as labourers and also supplemented their incomes with fishing activities, which is the second most common occupation in both locations. Raising of chickens and ducks was also a common supplement to incomes. Both rice and fishing products were usually traded with the adjacent village of Kadon Kani. When asked about the effects of climate change in the area, Tun Kyaing mentioned that there had been erosion along the coastline and salt encroachment toward the paddy fields. As a consequence, arable land has been lost along the coast and this was especially due to the effects of cyclone Nargis. Following that event, around ten farmers lost plots amounting to around 50 acres total, or around five acres each. The loss of the paddy was a combined result of salt intrusion and the sand that was deposited by Nargis in the paddy fields, making them unproductive thereafter. Paddies that were located further inland however, could regenerate after about three months, but these fields yielded lower crops in the aftermath of the cyclone, leading to reduced incomes for the owners.

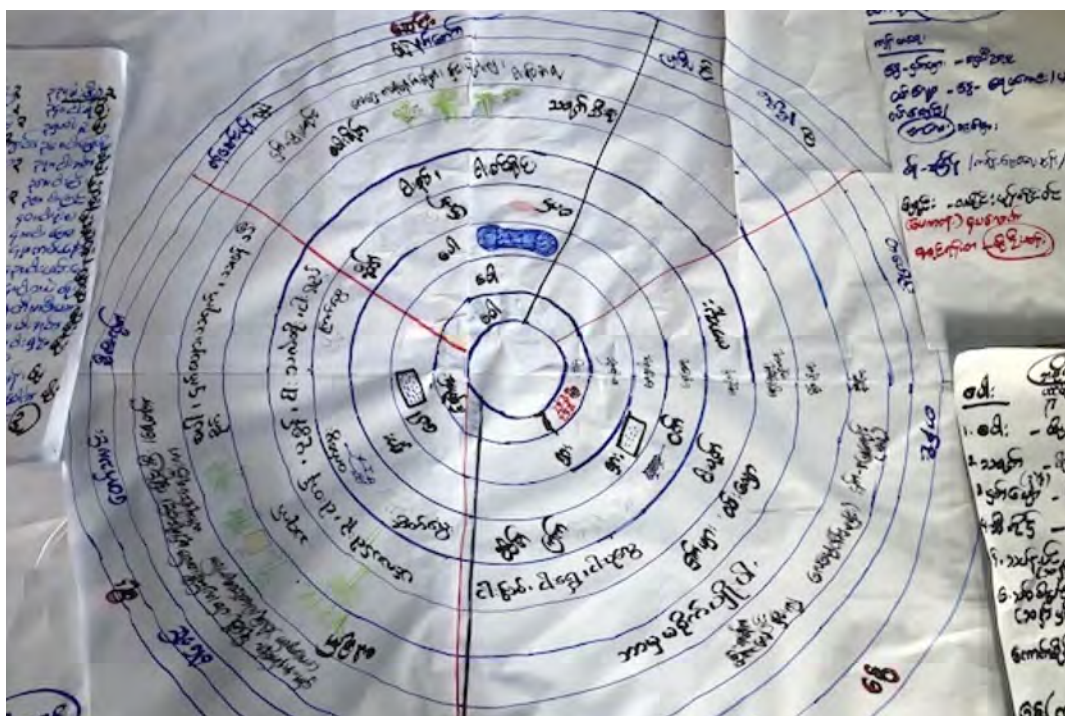
MON STATE

29. The second case study was carried out in Khin Dan Village in the Mon state on a small exposed coastal strip at the northern mouth of the Salween River. Khin Dan is one of five villages along with Ahlat, Ywarma, Chan Thar Lay and Chan Thar Gyi which comprise the Ahlat Village Tract approximately 10km from the Paung Township. Khin Dan Village is comprised of 218 households with a population of approximately 700 people. The research team first visited the village in June 2017 with Ecodev and Kamaryut Media to record a documentary on climate change. A second follow up visit in April 2018 by Ecodev project officers was undertaken to conduct more in-depth focus group workshops and comprehensive community interviews. The second research visit focussed on the households adjacent to the coastline that were at greatest risk from storm surge and rising sea levels. Interviews were conducted with 3 household headmen and 2 focus group workshops were held over a three-day period, with participation of 11 men, 5 women and 15 children. Participatory tools were used to engage the community in focus group workshops and help them to be able to articulate their understanding of the impacts of extreme weather events

and climate change to their village. The seasonal calendar tool and construction of a histogram timeline was undertaken in the local Mon language then translated to Myanmar and English. The table shows the Mon names for each month of the year, noting that their calendar year starts in April. The children participated by drawing the stories told by adults on the seasonal calendar and histogram activity sheets, ensuring engagement of all community members.



30. The seasonal calendar was used to investigate the socioeconomic condition, the traditional knowledge and weather types at different months of the year. Moreover, it is a tool used to identify the linkages between changing weather patterns, traditional knowledge, socio-environmental changes and their effects to livelihoods of the village community. The seasonal calendar was constructed by drawing the circles for ten categories such as seasons, months, weather conditions, agricultural livelihoods, fishing, water availability, job opportunities and income. The mixed methods approach included individual interviews, focus group discussions and field observations of the village. The questions were designed to focus on their understanding of extreme weather events and climate change, with an emphasis on traditional ecological knowledge and changes to the local environment. For the Mon, the year is divided into three distinctive seasons: Kanyaw (hot season), followed by Ka Som (wet season), and then the cold season (Ka Nyang). The hot season runs from March to June, the wet season July to October and the cold season November to February. According to the focus group discussion, in recent years they have only observed two seasons, namely hot season (January to June) and wet season (July to December). Due to rising temperatures from climate change they reported that they no longer get cold weather conditions that they used to experience many years ago. Each season can be further differentiated with particular climatic conditions linked to livelihood activities such as wind direction and fish availability. For instance, one of the indicators for the cold season is that the ocean temperatures get cooler, the wind changes direction to come from the east and Nga Hnut (Dwarf catfish) can be caught in close to the shoreline.



The Mon Seasonal Calendar for the Khin Dan Village.

In the hot season (Kanyang) the wind direction comes from the west and the villagers observed the bird colour changes to white and many different species of fish can be caught. The wet season (Ka Som) can be differentiated by the Bro Ku (the arrival of rain), thunder, strong wind and lightening (chatpaleepot). The villages know the Ka Som is coming when the bird colour changes to black also indicating that it will soon be time to stop fishing and focus on agricultural activities such as planting rice.



Children and youth from the Khin Dan Village engaged in participatory planning workshop activities.

31. The results of the seasonal calendar activity found that the village members had a good understanding of the impacts of extreme weather events and climate change to their livelihoods. The predominant livelihood activities of the households that participated in the study were fishing, rice cultivation and small-scale livestock activities, fishing was, however, the main source of income. In the seasonal calendar activity villagers listed all the major fish species that are link to seasonal weather changes further indicating the depth of knowledge that exists about environmental condition and changing climatic patterns. According to the fisherman that participated in the discussion groups, the significant impact of no longer experiencing a cold season is that some types of fish such as Nga Hnut (Dwarf Catfish) are now difficult to catch due to a rise in ocean temperatures. Fisherman also reported that another impact of rising temperatures was that fish no longer came in close to shore and that boats have to go further out to sea to get substantial catches. These observed changes in fish availability due to rising ocean temperatures is having an impact to livelihood income as they now have to spend more money on fuel for their boats.
32. The villagers also linked water availability to changing seasons, historically in the wet and cold seasons there was plenty of water available but in the hot season water resources were scarce. With rising temperatures in the cold season, villages are now observing greater rates of evaporation and water is now running out in what was once the cold season months. This is a major impact of climate change to the village and puts it in just as much threat as do extreme weather events and sea level rise. As was discussed at the focus group workshop, "it doesn't matter if the barrier protects from sea water as if we run out of drinking water we will still have to move". The situation has become so bad that on the recent visit by researchers to the village it was observed that all of the water reservoirs had dried up and villages were relying on donations of drinking water from local NGO organizations. This problem is confounded further by the fact that ground water wells that were once used for obtaining fresh water are now below the shoreline and salt water intrusion has greatly impacted other sources of ground water.
33. Compounding the effects of increased temperatures and changing seasonal variation in weather conditions has been the effect of extreme weather events to Khin Dan Village. Over the last 20 years villages have reported significant rates of beach erosion with an estimated 1.6km of coastline now lost. This was accelerated by the impacts of Cyclone Nargis in 2008, were the village was significantly impacted by a large storm surge event, destroying many house and eroding a large section of the coastline. In addition, the geographic location of Khin Dan Village at the mouth of the Salween River also means that it is very susceptible to shifting beach erosion. It is important to note that the observed beach erosion and subsequent loss of productive land along the coast of the Khin Dan village is not the result of sea level rise but in fact natural process of shifting sand banks from the mouth of the Salween River and impacts of storm surges in the monsoonal season. Predicted future sea level rise will however, accelerate these processes and compound the impacts to the local community. In December 2016, the government started construction of a tidal barrier to protect the village tract, its agricultural land and a nearby freshwater reservoir from storm surges in the monsoon season. Subsequently, a storm surge in the 2017 monsoon season, badly destroyed this barrier and reconstruction by the Department of Irrigation and Water Utilization Management, under the Ministry of Agriculture, Livestock and Irrigation have now repaired and upgraded the old barrier.

34. Approximately five houses are located on the front beach dune and are not protected from the barrier and there was great concern amongst these households to if their houses would survive the next monsoon season. Most other households reported having to move their houses back from the beach dunes towards the inland side of the barrier. As one community member discussed, there is nowhere left to move and in fact many people reported moving up to five times over the last ten years as beach erosion from increased storm surges has inundated houses and, in some cases, destroyed them completely. Some households mentioned that villages such as Padauk Khone and Tharyar Khone have already been shifted and where allocated land to the inland part of the village tract due to the beach erosion over the last twenty years. Due to limited land availability, it would be difficult to further relocate entire villages. It was conclusive from the focus group workshops that if the barrier does not hold villages would have no further options but to consider moving out of the village tract area. Most people acknowledged that this would one day be a reality but hoped they would still have many years before they would have to move. In preparation, some village households that can afford to do so, have purchased land in Yangon and Paung townships. In the focus group workshops, discussion was held to determine if village households would be willing to move to government allocated land as part of a land bank initiative. Most of the villagers said that they would be happy to move if the government created livelihood opportunities to secure income. As one village household headman commented “we are mostly fisherman if we have to move what would we do, my family has only ever been fisherman we don’t have many skills in agriculture or other livelihood activities”. This will be a major consideration that the government will need to take account of in the resettlement of displaced villages in the future.



Houses still remaining on the beach front in Khin Dan Village.

INTERVIEW WITH U WIN MAUNG, KHIN DAN VILLAGE, AHLAT VILLAGE TRACT, PAUNG TOWNSHIP, MON STATE

Mr Win Maung is a farmer who owns 30 acres of land in Khin Dan village, where he has lived since childhood. In the village tract, 50 farmers own over 1000 acres of paddy fields. Larger landholder farmers own at least 10 acres and smaller farmers hold between three and five acres. The total population is over 10,000 people. The major livelihood activities in the area are fishing, livestock and paddy growing. There has been some out-migration from the village tract as some of the population migrated to Thailand in the search of higher salaries there. Win Maung estimated that only half of the farmers in the tract have Land Use Certificates and that many farmers are still awaiting the outcomes of their applications. Regarding climate and environmental changes in these areas, Mr Win Maung said the biggest climate change effect was rising sea levels due to erosion over the past 20 years.

Some villages within the tract have already relocated from the beach side to the inland side of the Ahlat village tract due to this erosion. Win Maung also mentioned that some migrants from Kyaukse Township moved to the abandoned land where the above described two villages were located before. About 500 households from other areas in Myanmar (Kyaukse and others) have already moved into the area along the waterfront vacated by former residents, so they can pursue fishing for their livelihood, despite the eroding coastline and rising sea level.

According to Win Maung, the villagers realized that erosion has accelerated year by year and in response they tried to solve this by building a small barrier along the shoreline about 15 years ago, to prevent sea water from moving inland which would destroy arable land and contaminate freshwater sources. This first barrier was gradually destroyed over the course of the 15 years. In 2016, the Mon State Department of Irrigation (DOI) reconstructed the barrier in the village, however, during the 2017 wet season, rains and tides destroyed this as well due to poor construction. The DOI are now in the process of rebuilding the barrier with stronger construction methods; the new barrier is about 360 metres long, 3.5 metres wide and about 3 metres high. It is hoped that the barrier will prevent saltwater intrusion on paddy fields and fresh water storage, particularly the nearby reservoirs. The villagers are now being paid as day labourers to help the DOI to reconstruct the barrier. The local police are also assisting in the efforts.

Even with efforts to rebuild the barrier, some villagers have moved to Yangon and some have relocated to the inland side of the Ahlat village tract in order to move away from the increased risk of storm surges and beach erosion.



Sea barrier built by farmers in between Shwe Sar Yan and Boe Tauk Khone villages.

III. ANALYSIS OF PRELIMINARY FINDINGS

35. The information collected by the team during interviews in the Delta and in Mon State, combined with analysis of the geographical realities of the delta and international human rights law, constitutes the basis upon which to make a preliminary assessment regarding the feasibility of the MNCLB idea, in terms of the willingness of populations at risk from extreme weather events and climate change induced displacement to move locations in an organised fashion at some point in the future.

FINDING (1): VULNERABLE VILLAGERS AT RISK ARE WILLING TO MOVE, BUT NOT UNTIL THEY ARE FORCED BY CONDITIONS TO DO SO.

36. It became obvious throughout the process of obtaining information, that the general attitude of the villagers was that if climate change (as first manifested in more frequent cyclones, followed by rising sea levels) posed a risk to their safety and threatened their livelihoods, then and only then, would they consider moving to a new location. There was no clear consensus on whether adaptation would be possible or produce sufficient income to substitute for income losses caused by climate change. Some thought new income streams were a possibility and indeed, there were some farmers who incurred land losses during cyclone Nargis who had been forced to find alternative income streams. The most common examples were focusing on fishing or setting up small businesses. Turning to the second point, as the interviews with farmers from Boe Tauk Khone clearly indicate, the income generated by fishing activities fails to generate the same levels of income. Fishing can provide subsistence levels of income, whereas rice related activities generates a surplus that supports families throughout the year. In the cases of the Boe Tauk Khone farmers, children from each family were forced to drop out of schooling, as they could no longer afford fees. This highlights the real impact of rice paddy field losses on farming families.
37. In terms of housing adaptation, the 100-household headman from Shwe Sar Yan was quite certain that adaptation of existing housing was not a possibility, pointing out that to raise the houses closest to the Bogale River which are currently on stilts, would expose them to the threat of the strong winds that accompany the monsoon season, making them even more structurally vulnerable. His suggested alternative was that the population closest to the sea would have to move inland, in order to seek higher ground. Based on the observation of the research team, however, there did not appear to be any available land in the village that was at any higher elevation large enough to support a sufficient amount of housing for the coastal residents of Shwe Sar Yan. Expanding on this point, it was noted by the team that terrain all the way from the coast back along the 80km to Bogalay Town appeared to be extraordinarily flat and thus equally vulnerable to permanent inundation. The villagers did not necessarily link changes in the village resource usage to vulnerability to natural disasters and climate change, but scientific research certainly does. Vulnerability to storm surges, for example, is linked to residents and infrastructure proximity to the coast, as well as the robustness of the natural protection afforded by mangrove and other vegetation along the coast.¹⁷ The photographs and testimony from villagers show that a variety of trees have been lost along the southern coastline and the histograms reflect that there has been a reduction in the forest and forest products, as trees are cut for fuel and housing needs.

¹⁷ Horton, R., De Mel, M., Peters, D., Lesk, C., Bartlett, R., Helsing, H., Bader, D., Capizzi, P., Martin, S. and Rosenzweig, C. *Assessing Climate Risk in Myanmar*. New York, NY, USA: Center for Climate Systems Research at Columbia University, WWF-US and WWF-Myanmar, 2016, 47.

38. Although many of the residents in the two Delta villages clearly understood the dangers posed by extreme weather events, it was clear in the focus group discussions that for many of the older residents there was no clear desire to leave their villages. Several of the FGD participants in both villages stated that they had never been beyond the nearest larger village of Kadon Kani, about one or two kilometres down the road. As such, it was difficult for these participants to envisage such a drastic move in the future and they had not really contemplated such a change. Some of the feedback provided when the villagers were questioned about why they would wish to stay, even if climate change began to degrade incomes and affect safety, was that many people's families had lived in the same village for several generations and many people's parents had passed away there. Therefore, it appeared as if there was an element of spiritual connection for people to the land in question. This would obviously be broken if people are forced to move. It seemed to many that this close bond to the location, or sense of place, carried greater weight than the future threat posed by rising sea levels or extreme weather events, even though the vast majority of people were present in both locations during cyclone Nargis and for many, this was a highly traumatic event in their lives. The issue of the increasing likelihood of such events in future was raised, but most residents seemed to believe that they would simply be able to move away from the area temporarily until the effects of future cyclones receded, after which they would return and continue life as before.
39. Research is inconclusive regarding the prospect of increasing frequency of tropical cyclones, due to the uncertainties created by 'natural variability, limited historical data and limited ability of climate models to simulate tropical cyclones'.¹⁸ Nevertheless, "[r]esearch indicates that there is a projected increase in extreme precipitation near the centre of tropical cyclones making landfall along the coasts of Bay of Bengal, and that there will likely be a global increase in maximum wind speeds and intensity of the strongest tropical cyclones as upper ocean temperatures warm with climate change".¹⁹ The delta remains one of the most vulnerable areas of the country, hosting 40% of the population and accounting for 85% of rice production across a vast area of low-lying territory. With increases in strength predicted in tropical cyclones in future, rising sea levels will also increase storm surges, allowing them to reach further inland and damage more paddy land with salination and sand, as cyclone Nargis did in 2008.
40. On the issue of village consultations and free and informed consent prior to any planned relocation, international norms related to internal movement need to be taken seriously and subject to full compliance. The Guiding Principles on Internal Displacement envision situations of conflict and man-made or natural disasters and have not therefore necessarily been considered to apply to the kind of planned movements that a land bank scenario would entail. Nevertheless, there is a strong argument to be made that climate change is indeed a man-made disaster, albeit at a slower rate than what has traditionally been the case (though even this appears to be changing). As such, it would seem appropriate that the Guiding Principles be adhered to in order that a rights-based approach to movements is undertaken. The guidelines envision crucial rights protection obligations for duty bearers, in this case the Myanmar government, which would result in: Informed consent (Principle 7(3)(c)); Freedom of movement (Principle 14(1)); Adequate Standard of Living (Principle 18);²⁰ No arbitrary deprivation of property and/or possessions (Principle 21); Rights to education (Principle 23); Right to be assisted in the resettlement process by government and participate in decision making (Principle 28); and Right to recovery of property or compensation (Principle 29).

¹⁸ Id, 46.

¹⁹ Intergovernmental Panel on Climate Change, *Climate Change 2013: The Physical Science Basis Summary for Policymakers, Technical Summary and Frequently Asked Questions*, Working Group 1 Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, 2013, 107.

²⁰ Subsection 2 specifies the following: At the minimum, regardless of the circumstances, and without discrimination, competent authorities shall provide internally displaced persons with and ensure safe access to: (a) Essential food and potable water; (b) Basic shelter and housing; (c) Appropriate clothing; and (d) Essential medical services and sanitation.



Potential beneficiaries of a Myanmar National Climate Land Bank.

41. More recently, the Peninsula Principles on Climate Displacement Within States (2013) establish a specific normative framework of international human rights law related to climate change displacement.²¹ These principles concur with the Guiding Principles, but are targeted more specifically to rights-based prevention and response to climate-induced displacement by national authorities (and to a lesser extent, the international community). The Peninsula Principles lay out governmental obligations in Principle 7, which proposes that national authorities establish institutions and mechanisms that can help achieve durable solutions for those induced to move because of climate change. Clearly, a Myanmar National Climate Land Bank falls into the ambit of this principle, as a mechanism that would assist in the provision of durable solutions to climate displacement. This would be assisted by legislation aimed at administering the land bank, in line with Principle 7(b) and (c). The principles also encompass the identification of suitable land for government-led, organised relocations, protection of HLP rights in the new location and assistance in the provision of alternative livelihoods, as well as essential services like health and education (Principles 9-13). Throughout any such process, and in line with the Guiding Principles, the issue of consent of affected populations is a key requirement.²²

²¹ See, <http://displacementsolutions.org/peninsula-principles/> and <https://environmentalmigration.iom.int/peninsula-principles-climate-displacement-within-states>.

²² See: Scott Leckie and Chris Huggins (eds) *Repairing Domestic Climate Displacement: The Peninsula Principles*, Routledge, 2015.

FINDING (2): THERE ARE A DISTINCT SET OF CRITERIA WHICH WOULD HAVE TO BE MET BEFORE CONSENT TO MOVE WOULD BE OBTAINABLE.

42. Freedom of movement and the right to choose one's residence are basic human rights, widely recognised in international and national laws. These and related rights are widely protected in foundational human rights documents such as the *International Covenant on Civil and Political Rights*, as well as the *Guiding Principles on Internal Displacement*, the *Peninsula Principles* and countless others. In order to guarantee that any population movements due to the effects of climate change are voluntary, therefore, it is imperative that such decisions are taken by the people themselves, are voluntary and with the full consent of affected populations. While this is a fundamental concept in human rights law, the same message was delivered by the populations consulted in the Delta. For the residents of Shwe Sar Yan and Boe Tauk Khone to consider any moves that would take them away from their ancestral lands, certain conditions which would need to be met by the authorities. These conditions were mirrored to a large extent in both villages and included: livelihood guarantees; health and education services; security of tenure; assistance for the elderly, youth and the infirm; and transportation assistance for those with livestock. Two of these concerns, livelihoods and security of tenure, invite further consideration.
43. Feedback showed that the majority of the populations in the two villages rely heavily on rice paddy farming as their primary source of income, whether through ownership or as labour during the harvest for other owners, or pre-monsoon preparation. The major alternative income source is derived from fishing activities for both sustenance and trade. As indicated earlier, for several farmers that lost land productivity during Nargis due to sand and salt contamination, fishing became the next most desirable livelihood. In order to comply with both the wishes of populations who could conceivably move to a new location and to meet the obligations under international law, alternative livelihoods need to be provided by the government. Alternative livelihoods could mean similar livelihoods in a new location, or new occupations altogether. The types of assistance that could be offered to relocated populations clearly depend on the type of land that is identified as suitable for a land bank. For example, mountainous areas far from the coastline would afford the safety of higher elevations from flooding, but would not necessarily be conducive to fish farming or large-scale rice paddy cultivation. The implication being that relocated populations would have to be retrained, the costs of relocation increase considerably due to retraining needs, and the prospect of retraining may reduce the likelihood of obtaining consent. When identifying areas for a land bank (either as one block or as multiple smaller blocks), the government will need to bear in mind the potential for providing an income stream for relocated populations.
44. As can be seen from the FGD feedback, the majority of the population have no formal security of tenure in the form of Land Use Certificates. Under the *Farmland Law 2012*, these certificates are necessary to formalise tenure and protect use rights over agricultural land. Although the sample size in the villages was small, the very low numbers of people with formal documentation mirrors what has been shown in various reports and research about land tenure and documentation across rural parts of the country more broadly.²³ Indeed, according to the ADB, "30% of the rural population is landless and has no source of income other than providing labour to the agriculture sector".²⁴ The implication to note from that statistic is that voluntary relocation of some populations

²³ For more information see, for example, Spectrum Sustainable Development Knowledge Network, 'Form 7' Seven Case Studies of Farmland Registration in Kachin State, October 2015.

²⁴ Asian Development Bank, Myanmar: Agriculture, Natural Resources, and Environment Initial Sector Assessment, Strategy, and Road Map, April 2013, 14.

may well raise the issue of replicating tenure in terms of both land and housing. This means facing the prospect of relocating the landless and keeping those individuals in that state or to grant land to landless individuals. Clearly, the former option is undesirable and therefore there are huge policy implications at stake which the government will need to consider in relation to this issue.

45. The nascent process of land registration under the *2012 Farmland Law* has proven to be time consuming and expensive for most farmers. Given that much of the land under cultivation across rural Myanmar is held under customary law and that dispute resolution usually takes place at the village level (through village headmen), there has traditionally been little utility in registering land through a slow and extractive bureaucracy.²⁵ The mixed nature of tenure at the village level between the customary and the formal is an important issue for authorities when considering how security of tenure issues are to be addressed in a resettlement location. A planned relocation to a land bank location could represent an important opportunity to either recognise customary law in its present form under the formal system or to formalise customary ownership. Much depends on the potential reforms of the 2012 land laws (both the *Farmland Law* and the *Vacant, Fallow and Virgin Land Management Law*) as well as any future National Land Law that is to be guided by the 2016 *National Land Use Policy*, which acknowledges the existence of customary laws in Myanmar. Whatever shape the legislative amendments take, security of tenure must be ensured for recipients of a resettlement to a land bank area in line with relevant international standards.
46. Interviews and FGDs included questions regarding women's HLP rights in the concerned populations. The feedback presented a picture of women having rights to own land independently, rights to 50% of house ownership following divorce and rights to inherit solely from parents. The three female farmers that were part of interviews in Boe Tauk Khone were female heads of household and land owners, which provided some evidence to back up the interviews with the 100-household heads of both villages, along with the FGD feedback about women's land rights. What was not clear was the access of women to dispute resolution mechanisms in these contexts. It was evident that the roles of authority within the villages were held exclusively by men, including the 100-household headmen and the village headmen. As the FGDs show, the land held within the village is predominantly held under customary law, as only one person out of more than 40 participants in the FGDs was in possession of tax receipts or a Land Use Certificate. The limited research on customary land management and dispute resolution in Myanmar tends to indicate that at the village level, disputes tend to be handled primarily by the village headman, who as the name suggests, is usually male. Research by ECDF found across various ethnic regions including Shan, Chin, Kachin, Mon, Kayin and Kayah that female representation among Village Chiefs, Village Committees, and Land, Forest, and Water Committees was only 6%.²⁶ In Mon and Kayah Village Committees, there was no female representation at all at the time of the research done by ECDF. Above the village level, where a dispute may be resolved if it cannot be resolved at the village level, are the Ward and Village Tract Administrators. Research showed in 2012-2013, that only 0.25% of these positions were held by women.²⁷ Although this research cannot make claims regarding women's access to justice, it is possible to at least raise the concern that there may be barriers which women face in protecting HLP rights within a dispute resolution system that exhibits a high degree of gender bias in positions of power. This is an area that would require further specific research when considering how the rights of specific and potentially marginalised sections of society would be protected by the Myanmar National Climate Land Bank in future.

²⁵ Spectrum Sustainable Development Knowledge Network, 'Form 7' Seven Case Studies of Farmland Registration in Kachin State, October 2015, 20.

²⁶ Ethnic Community Development Forum, Our Customary Lands: Community-Based Sustainable Natural Resource Management in Burma, July 2016, 43.

²⁷ Namati, *Gendered Aspects of Land Rights in Myanmar: Evidence from Paralegal Casework*, April 2016, 3. Subsequent elections were scheduled for 2016 for these positions, so the percentage may have improved since the publication of those figures in 2016.

FINDING (3): AVAILABLE ARABLE LAND IN THE AYEYARWADDY DELTA IS LIKELY INSUFFICIENT TO PROVIDE NEW LAND RESOURCES TO ALL IN NEED, THUS IMPLYING THE POTENTIAL NEED FOR NON-ADJACENT, DISTANT RELOCATION AND NEW LAND SITES

47. A preliminary investigation of the land use across the Delta reveals the scarcity of available, arable land. The amount of land under rice cultivation in Myanmar, the majority of which takes place in the Ayeyarwaddy Delta, is said to have doubled between 1990 and 2010.²⁸ This indicates a significant increase in pressure on land resources. Maps produced by the Myanmar Information Management Unit break down the land use and types within the delta townships. Outside of the urban centres, the vast majority of land is already under rice cultivation, with the remaining areas covered by wetlands, forest, mixed forest, grassland and shrubland. This pattern is repeated across the Delta. According to the Asian Development Bank, 18% of the land in Myanmar is already under cultivation and of that area, 66% percent is under rice cultivation. A further 50% of the total area is heavily forested or unsuited to agriculture.²⁹ To the north of the Ayeyarwaddy delta is the Central Dry Zone, an area characterised by the country's lowest annual rainfall, an extended dry season and infertile, sandy soils, coupled with the second-highest population density in Myanmar after the Delta.³⁰ Considering these basic characteristics, it can already be surmised that a population moving from the fertile delta with access to fishing and farming, to the closest available area with potential for alternative livelihoods, i.e. the central dry zone, will not have the same opportunities for livelihoods. It would therefore be incumbent upon the government to address these livelihood shortfalls through training and investment in other income generating activities, in order to maintain compliance with the relevant international standards. This also has implications for those planning to advocate for the MNCLB concept with government officials, in that the costs of the land bank will be considerably higher than they would be in the case of a simple physical relocation and allocation of land.
48. With an estimated rural population in Myanmar of 65-70% and the agricultural sector producing around one-third of Myanmar's GDP, land is a critical resource in the country. In addition to the economic value of land, there are considerations of spiritual connections to land through animist beliefs in some areas of customary land management.³¹ Apart from the meaning of land to many rural populations, which will have an impact on the desire of populations to move away from the land of their ancestors, the customary land management practices themselves also have an impact on the speed with which the feasibility of a land bank needs to be assessed. The new land legislation of 2012, in particular the *Farmland Law*, the *Vacant, Fallow and Virgin Land Management Law* and the *Foreign Investment Law*, all need to be taken into account in relation to their impact on the rate at which land will remain available for large-scale land acquisitions and investments across the country.

²⁸ Asian Development Bank, *Myanmar: Agriculture, Natural Resources, and Environment Initial Sector Assessment, Strategy, and Road Map*, April 2013, 7.

²⁹ *Id.*, 3.

³⁰ *Id.*

³¹ Ethnic Community Development Forum, *Our Customary Lands: Community-Based Sustainable Natural Resource Management in Burma*, July 2016, 6.

49. Preliminary research suggests that land grabbing by a variety of actors (government, military, private actors) during the periods of military rule has not been adequately addressed³² and that the new legislation undermines customary ownership of ancestral lands.³³ Moreover, analysis suggests governmental preferences for large-scale agribusiness projects over traditional smallholder farming, in efforts to stimulate economic growth,³⁴ while bureaucratic inefficiency and corruption make it difficult and time consuming for farmers to register their holdings with Land Use Certificates.³⁵ Taken together, these factors suggest that finding suitable land sooner rather than later is advisable, especially given the amount of land that will be required over time for climate affected populations in the delta.
50. In interviews with both villagers and village authorities, the issue of distance from the current locations was raised. The general response was that the distance itself was not the main issue. The main issue was the connection to the current location due to the factors mentioned above regarding leaving an area that was once occupied by ancestors, familiarity with the area etc. If that connection was forcibly broken by the need to relocate in the interests of safety and protecting livelihoods because of the insurmountable effects of climate change on residential circumstances, then the overriding consideration for most seemed to be how they would physically achieve such a move.
51. Two common issues raised were the movement of the elderly and children to new areas and for those with moveable property and chattel, how these possessions were to be moved. Most stated that they would require some government assistance for such an endeavour. If that was forthcoming, and if a complete change of livelihood was required, then the distance of a new location from the present one appeared to be less of an issue for most respondents. Areas such as the Bago Yoma, the area between Yangon and Napyidaw, shows some potential for future land use, but such areas require a full feasibility study by the various related authorities. Due to the degraded nature of forests (caused by various factors), such areas would not necessarily fall into the category of being eligible for conservation efforts and may lend themselves to repurposing for efforts like the MNCLB.
52. The majority of those interviewed cited the provision of healthcare and education for their children as essential components of any change in location. The proximity of Kadon Kani within one or two kilometres of both Shwe Sar Yan and Boe Tauk Khone and offering primary, secondary schools and a health facility, is very convenient for both villages' populations. With the histograms showing a potentially increasing amount of out-migration as climate change continues to diminish opportunities for paddy cultivation, there is potential for a growing percentage of the population over time to be comprised of the elderly and the young. Therefore, health and education facilities are likely to remain high priorities for both villages. In terms of land selection and planning for a future land bank, these stipulations by the villagers mean either that land would need to be found near existing towns, or that these services would have to be planned for in a new site, either of which have implications for land selection.

³² Displacement Solutions and Norwegian Refugee Council, *Restitution in Myanmar: Building Lasting Peace, National Reconciliation and Economic Prosperity Through a Comprehensive Housing, Land and Property Restitution Program*, March 2017, 2. Also see various reports by HURFOM, KHRG, Namati, EPRP, Transnational Institute, et al.

³³ Srinikumar Srinivas and U Saw Hlaing, *Myanmar: Land Tenure Issues and the Impact on Rural Development*, Food and Agriculture Association of the United Nations and National Action Plan for Agriculture, May 2015, 12-16.

³⁴ Food Security Working Group's Land Core Group, *Legal Review of Recently Enacted Farmland Law and Vacant, Fallow and Virgin Lands Management Law Improving the Legal & Policy Frameworks Relating to Land Management in Myanmar*, November 2012, 3 and 13-14.

³⁵ Spectrum Sustainable Development Knowledge Network, *'Form 7' Seven Case Studies of Farmland Registration in Kachin State*, October 2015, 20.

IV. CONCLUSIONS

53. Myanmar's political and legal history has been characterised by many things, but few more so than forced displacement made possible by a combination of military force and violence, bolstered by governments and a legal and political framework that clearly favours the military, crony companies linked to military officials and large-scale extraction industries and foreign investors. While neighbouring countries, in particular, China, Lao PDR and Viet Nam (all ostensibly 'socialist' in orientation) also have poor track records on forced relocation and displacement there have at least been efforts, albeit far from perfect and invariably coerced, to provide resettlement housing and sometimes land to those who were deemed to be in the way of economic progress and development in a way which only top-down, State-driven political structures can do. Myanmar's tortured political history since independence in 1948, with the military maintaining so much undemocratic and unchecked control (today, for instances 25% of all parliamentary seats are reserved for the military) has meant that displacement has been seen by those in power and those linked to them simply as a useful tool for achieving their objectives.
54. As a result, the people of Myanmar across the board have suffered continued bouts of forced displacement for decades, be it from conflict, land grabbing, ill-conceived development projects and many other causes, all enabled by and supported by not just pure violence, but by the law itself, leading to a situation today whereby many millions of people remain forcibly displaced and wishing to return to their original homes and lands through the process of restitution. This reality in Myanmar is well-known and something that will not quickly be resolved, notwithstanding if the NLD or any other democratically elected party is governing the country, for the question of land and displacement lie at the core of Myanmar culture and the political and economic realities driving the country today. All of this has been said before and researched thoroughly, however, we outline this here simply to point out that **any** proposed movement or planned relocation of people in Myanmar will invariably, and rightly, be treated with suspicion given the deplorable track record of the country in this regard. And this will even be the case when such planned relocation is considered in circumstances caused by the effects of climate change that no longer allow people to remain where they are, particularly the millions of citizens currently residing along the coastal and river-side areas of the country.
55. And thus it should come as no surprise that the perspective of the villagers surveyed indicates that from their perspective, a land bank is feasible at a point in the future where current livelihoods become untenable and/or extreme weather events threaten safety and where certain conditions related to alternative livelihood provision, health and education services and security of land tenure are met in a new location. At present, the populations interviewed, even though they reside in highly vulnerable areas, are not yet ready to move. Climate change in the form of rising sea levels is not yet a concern to these groups in that they are adapting to the loss of paddy lands by simply increasing their reliance on fishing activities or other forms on income generation. The overriding fear of the inhabitants of Shwe Sar Yan, Boe Tauk Khone and Khin Dan is the likelihood of an increase in extreme weather events, rather than rising sea and river levels. Almost all the people consulted in this study lived through Cyclone Nargis and this traumatic event has had an indelible impact on the communities and their residential security. Though they fear further similar events, they remain committed to remaining on the land of their ancestors until such a position is no longer safe and sustainable.

56. Given that short-term coping mechanisms are available for dealing with cyclones in the Delta (taking shelter in nearby towns and returning later, increasingly sophisticated early warning systems, etc), and now that sea-level rises are consistent but gradual and that populations are not opposed to moving in future, **there is sufficient justification and time for Union-level authorities to begin planning for the future.** The establishment of a Myanmar National Climate Land Bank will take several years to complete, given the complexities outlined above related to land selection, legislative protections and administrative mechanisms. The intervening years would be productively spent working on these issues, such that if and when populations begin to calculate that attachment to ancestral lands and livelihoods is outweighed by the danger posed by increasingly frequent extreme weather events and diminishing incomes from lost paddy lands, the government might be in position to offer an alternative in a manner that will mitigate the likelihood of conflict over one of Myanmar's most valuable resources.

V. RECOMMENDATIONS

57. Myanmar's geographical location and the country's unenviable political history combine to place the country in an extremely tenuous position regarding its potential to withstand the severe and growing effects of climate change on the country. As one of the world's truly frontline states in terms of climate change threats, Myanmar needs to do everything physically possible to prepare itself adequately as the effects of climate change worsen. While the effects of climate change will manifest in Myanmar in myriad ways, it will be in the area of climate displacement that it will become particularly visible. With thousands of kilometres of coastline and riversides, millions of people face the very real threat of climate displacement.
58. Given the distasteful displacement history of Myanmar which has harmed so many millions of innocent people, increased already staggeringly high levels of landlessness and poverty and the further emboldened those carrying out displacement due to the impunity associated with these acts, the government needs to openly distance itself from previous regimes and do whatever possible to lead domestic efforts to tackle the very real effects of climate change by pursuing innovative policies and legislation that recognises the scale of the climate crisis in the country and that creative political interventions can bolster the rights of ordinary people and at the same time signify a significant break from all previous, post-independence regimes. **Indeed, actively pursuing the establishment of a Myanmar National Climate Land Bank by the present government will not only symbolise that it takes the climate threats to the country seriously, but that it is also ready and willing to lead the way in addressing the needs of ordinary people in this regard.** Establishing a MNCLB will signal to the people of Myanmar and the broader international community (including bilateral and multilateral donors) that it knows the proportions of the problem and wishes to do everything within its powers to prevent displacement, provide rights-based and land-based solutions to climate displacement and develop the procedures and mechanisms needed to help perfect community-driven planned relocation proposals from communities who feel they need to relocate to safer and more secure areas.
59. And, yet, what if the government fails to act and establish the most practical way to prevent and resolve climate displacement? What happens to the *millions* - yes, *millions* - of people who stand to lose their homes and lands and who are subsequently left with nowhere to go but to the growing slums of Yangon and Mandalay or to distant small towns where they have no land, no social or economic connections and few, if any, livelihood options? What happens then will be huge increases in domestic displacement, huge increases in landlessness, poverty and

disenfranchisement, and huge increases in mistrust and lost hopes in government. The facts are crystal clear: Myanmar is under massive climate threats that left unaddressed will result in millions of people losing their homes and lands. This can be prevented and minimised, but only if active measures are taken immediately by the government to ensure that everyone is ready to act to find the best way forward. This will neither be easy nor cheap, but it must be done for if it is not, social catastrophe will be the only guaranteed outcome.

60. Bearing all of this in mind, Displacement Solutions and Ecodev would like to respectfully offer the following ten concrete and practical recommendations to the government in the interests of constructively grappling with an issue which to date has not yet been adequately addressed:

RECOMMENDATION 1: CARRY OUT COMPREHENSIVE NATIONAL CLIMATE IMPACT MAPPING

61. Despite the many climate change threats to Myanmar, to date only very limited national climate impact mapping has been carried out in the country and the current available data to undertake mapping is not at the scale required for vulnerability assessments. Given the 2000km coastline of the country, combined with the far lengthier rivers that run throughout the country, it is a certainty that mass climate displacement will occur in Myanmar, and in fact, that these processes are already well underway. A national climate impact mapping project can be carried out immediately by leading experts in the field, and is a necessary prerequisite for further concrete attention to preventing very large-scale climate displacement.

RECOMMENDATION 2: ESTIMATE THE TOTAL AMOUNT OF LAND LIKELY TO BE LOST DUE TO CLIMATE CHANGE EFFECTS

62. Information is also presently lacking in terms of the sheer scale of land likely to be lost due to the effects of climate change throughout the country. An accurate figure of these losses will be vital in developing proper responses which are beneficial to the people and communities affected.

RECOMMENDATION 3: CALCULATE HOW MUCH NEW LAND WILL BE REQUIRED TO PROVIDE NEW HOMES TO CLIMATE DISPLACED COMMUNITIES

63. Related to Recommendation 2, national calculations need to be made to determine the total acreage of land required to provide new residential options to vulnerable coastal communities voluntarily relocating and to those who waited too long to depart. Once this figure is known, further planning can take place towards the establishment of the MNCLB.

RECOMMENDATION 4: INVESTIGATE DEGRADED FOREST AREAS AS POTENTIAL LOCATIONS FOR PLANNED CLIMATE RELOCATION

64. Reserve forests account for 26% of the total land mass of Myanmar, amounting to some 41 million acres. Of that 41 million acres, 23 million acres appear to be degraded forest (55% of the total). Within forest reserves, six million acres are totally denuded for various reasons. Research should be carried out to determine if any of this land class could be appropriate for eventual inclusion within the land holdings of a MNCLB.

RECOMMENDATION 5: ALSO INVESTIGATE CURRENT SITES ON RECORDED VACANT, VIRGIN AND FALLOW LAND FOR FURTHER POTENTIAL LOCATIONS FOR PLANNED CLIMATE RELOCATION

65. Similarly, research should be undertaken (with great care) to determine if any land sites classified as falling under the Vacant, Virgin and Fallow Land Law (2012) would be suitable for possible inclusion within the land holdings of a MNCLB. In such instances, and indeed, all instances of such inclusions of land within the holdings of the MNCLB, it must be assured that such land is neither subject to any legal or other claims by claimants alleging previous land grabbing or displacement from it.

RECOMMENDATION 6: CONVENE A NATIONAL MEETING TO DESIGN, STAFF AND FUND A MYANMAR NATIONAL CLIMATE LAND BANK

66. The government should immediately host and convene a national meeting to design, staff and fund a Myanmar National Climate Land Bank. The meeting should be held in Yangon and involve national stakeholders and international climate change experts.

RECOMMENDATION 7: ADOPT A NATIONAL LAW ESTABLISHING A MYANMAR NATIONAL CLIMATE LAND BANK

67. Steps should be taken to draft a national law establishing a Myanmar National Climate Land Bank and pursuing its eventual adoption by Parliament.

RECOMMENDATION 8: ESTABLISH AN OFFICE, PLAN OF ACTION AND APPOINT MANAGEMENT STAFF OF THE MYANMAR NATIONAL CLIMATE LAND BANK

68. Once the law envisaged in recommendation 7 is implemented, immediate steps should be taken by the government to establish an office, plan of action and appoint management staff of the Myanmar National Climate Land Bank.

RECOMMENDATION 9: CARRY OUT THREE PILOT STUDIES IN PARTICULARLY VULNERABLE COMMUNITIES LIKELY TO BE DISPLACED BY CLIMATE CHANGE

69. Once the MNCLB is functional, funded and fully staffed, one of its first acts should be to Carry out three pilot studies in particularly vulnerable communities likely to be displaced by climate change.

RECOMMENDATION 10: AMASS A MINIMUM OF 10,000 ACRES OF LAND AS THE FIRST DEPOSIT INTO A MYANMAR NATIONAL CLIMATE LAND BANK

70. Finally, the MNCLB should set an initial target of amassing a minimum of 10,000 acres of land as the first deposit into a Myanmar National Climate Land Bank.

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Displacement Solutions (DS) - www.displacementsolutions.org - works with climate displaced persons, communities, governments and the UN to find rights-based land solutions to climate displacement. DS also works to empower displaced people and refugees to exercise their right to return and have restored to them their original homes, lands and properties through reliance on the right to restitution. DS works together with and on behalf of people who have been displaced not only by conflict, forced eviction or other human rights abuses, but also natural disaster, climate change or other circumstances beyond their control. DS assists in finding alternative solutions such as compensation or relocation if this is their wish. DS does not believe in simply blaming governments responsible for human rights abuses. We take human rights work one-step further by developing concrete situations where forcibly displaced people have lost their homes. DS offers practical guidance on how to reduce, eliminate or redress such abuses. This is done through development of institutional and policy frameworks, legal advocacy, training, research and media.

ECODEV is a profit-for-purpose organization registered as Ecology and Economic Development Company Limited (379/2006-2007) in Myanmar since 1999. The mission of ECODEV is networking for private public partnership in order to realize its vision of “Private Sector Led Sustainable Development” in Myanmar. All of its development programs focus on nurturing “Healthier Environment”(program of environmental conservation initiative and participatory action research by local community or partner organizations) by “Stronger Society” (program of social mobilization and building capacity of community based organization and youth leader) with “Responsible Business Investment” (program of environmental friendly business development) through “Strategic Partnership Development” (program of CSO networking for advocating public policy reform).



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