



Meandering to Recovery

Post-Nargis Social Impacts Monitoring Ten Years After



Meandering to Recovery: Post-Nargis Social Impacts Monitoring Ten Years After

World Bank

Enlightened Myanmar Research Foundation

Andaman Research & Advisory

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Abbreviations

DRR	Disaster Risk Reduction
GAD	General Administration Department
K	Myanmar Kyat
LUC	Land Use Certificate
MADB	Myanmar Agricultural Development Bank
NGO	Nongovernmental organization
SIM	Social Impacts Monitoring
VTA	Village Tract Administrator



Summary

On May 2, 2008, Cyclone Nargis struck Myanmar's Ayeyarwady Delta and swept across the region toward Yangon. By the time the storm had passed, it had killed over 140,000 people, tearing apart families, destroying homes, and shattering livelihoods. In the months and years following Nargis, communities, supported by the national and international aid community, worked to rebuild their lives and repair the devastation that the cyclone had caused. Homes were rebuilt, paddy field walls repaired, and new fishing boats purchased.

However, even as the process of recovery inched forward, villagers have had to contend with new and diverse shocks and changes that have both enabled and slowed their efforts to rebuild. Among others, climate change has led to unpredictable weather, hampering livelihoods, while the migration boom to Yangon and elsewhere has provided economic opportunity even as it has altered the local social fabric.

These more recent issues have had a complex inter-relationship with changes wrought by Nargis. As time has passed, they have become the primary concern of most villages studied by the social impacts monitoring (SIM) research. But the long-term effects of Nargis remain visible, combining with newer issues to create new challenges, exacerbate old problems, and, in some cases, even hasten the recovery process.

By focusing on a panel of 40 Nargis-affected villages across time, five rounds of SIM have been able to track how village life has changed both post-Nargis and, in more recent years, as villagers faced both new challenges and continued recovery from Nargis. This fifth round of SIM (SIM 5) provides a snapshot of village economic and social life in 2017 and analyzes change over more than nine years since Nargis. It assesses three main areas:

- 1. Socioeconomic conditions:** This focus area examines the conditions of livelihoods and the local socio-economy in the context of Nargis' destruction and the evolving context of the rural economy across Myanmar over the past five years. It looks at the three main livelihood groups (farmers, fishers, and landless laborers) and at key issues such as debt, land, and housing and local infrastructure.
- 2. Social relations and leadership:** This area assesses how communities have dealt with both the long-term social upheaval caused by Nargis and the more recent (but no less dramatic) changes that have accompanied Myanmar's political and economic transition. It reviews local relations within and between different social and identity groups and examines village leadership and institutions.
- 3. Recovery and resilience:** New to this round of SIM, the final analytical focus area identifies what recovery and resilience mean for households and communities in the Ayeyarwady Delta, what factors are most important in the recovery process and in building resilience, and to what extent villagers have had and have the capacity to develop both.

SIM 5 placed particular emphasis on understanding change over time, both since 2013 (when the SIM 4 research was conducted) and prior to Cyclone Nargis. As much as possible, SIM 5 draws causal links between exogenous events (such as cyclones, other natural disasters, political change, and national economic development) and household and community actions.

Socioeconomic conditions

In 2017, most villages' economic situations improved compared to four years ago, largely irrespective of how affected they were by Nargis. Livelihoods overall remain mixed, but the lower wages and stagnant local economy found in SIM 4 have been replaced by improved employment opportunities, better market access, and the ability of most households to access a new income stream if their primary livelihood falters. Major challenges to economic development remain, though they are most closely linked to systemic issues of climate, lack of infrastructure, and access to improved farming methods rather than long-term effects of Nargis or an inability to find a job.

Farming livelihoods were mixed, with higher costs of production offsetting price increases and yields increasingly varied and dependent on climate patterns

The cost of inputs for farmers has risen compared to 2013, driving the cost of production for small farmers' monsoon paddy to almost double compared to pre-Nargis levels. Summer paddy (increasingly planted by all farmers who can afford it thanks to higher and somewhat more reliable yields) saw cost of production per acre increase by over 30 percent. The increases have been driven by farmers' use of better quality and more expensive seed and fertilizer, as well as much higher labor costs.

Prices for paddy harvest have increased as well, with SIM panel farmers reporting an average price (per 100 baskets of monsoon paddy) of K6.3 lakh,¹ up from K3.7 lakh in 2013. It is yield, however, that remains the most determinative and variable indicator of the state of farming. Depending on the weather, experience of flooding and pests, or quality of the land, yields per acre for villages lightly affected by Nargis have varied from 23 baskets per acre in the worst year of the last five, to 55 baskets per acre in best year.

Returns from fishing livelihoods are similarly mixed based on geography, but low fish stocks continue to threaten the sector

In villages near the open ocean where catch levels have stayed relatively constant, increased prices and improved access to markets have benefited most fishers. However, fishers in villages along the Delta's rivers have experienced significant catch declines—a change attributed by fishers to unpredictable weather, increased river pollution, and the presence of large fishing boats from the towns on their traditional fishing grounds.

The costs associated with fishing have also expanded, as license fees in some areas have gone up and fishers have

found it necessary to invest in new boats and nets, as well as nets with a tighter weave, which present sustainability concerns. Given these different experiences, overall income from fishing across the SIM panel was flat between 2013 and 2017.

Landless laborers saw the greatest improvement in livelihoods from 2013 as wage increases, new credit access, migration, and small business opportunities all boosted incomes

Myanmar's national migration boom greatly affected the Delta, with many landless laborers moving to Yangon or other parts of the country in search of improved economic opportunities. This contrasts to previous rounds of SIM where migration was primarily a coping strategy. Many of the migrants are women, moving to Yangon to work in the rapidly expanding garment sector. The outmigration from SIM villages was also a significant contributor to higher wages, as farmers had to pay laborers more to ensure their crops were harvested. Within the village, especially those villages with good access to larger towns, landless households frequently reported using their expanded access to affordable credit (via both government programs and microfinance lenders) to invest in new income-generating activities, including small grocery shops, motorcycles for taxi services, and even mobile phone shops.

Expanded credit access has been accompanied by higher debt; some villagers are caught in a debt trap

Debt levels have expanded significantly since 2013 among all livelihood groups, and debt repayment continues to be a struggle within highly and moderately affected villages. Large and medium farmers have seen the largest increases in debt, a reflection of how expensive it is to finance a crop and the uncertainty of the harvest. Increased debt levels also reflect the significant increases in credit available within the village. In previous SIM reports, credit access was limited, particularly for landless households seeking affordable (i.e., non-private moneylender) loans. By 2017, there were several new low-interest government credit programs accessible by most villagers, and microfinance providers proliferated across the SIM panel.

Land consolidation has slowed, and for most farmers, selling land is a last resort rather than an economic opportunity

SIM 4 reported that economic strains were driving more land transactions and more land inequality; in 2017, these processes slowed. Even farmers who are deeply in debt seek to retain their land as long as possible, knowing one or two successful harvests would allow them to escape the debt trap. When land rights are purchased, the purchaser tends to be larger farmers within the village or from a neighboring

¹ One lakh equals 100,000 Myanmar kyats (K).

village, though researchers found a notable increase in landless households (generally young couples or households with remittance income) seeking to invest in land for the first time. Land prices vary significantly by village but also by where the land is located. Less flood-prone land situated near an access route could fetch five times the price of low quality land.

Transportation infrastructure and connectivity have improved since 2013, but many villages continue to lack basic social infrastructure

Road infrastructure has improved across the Ayeyarwady Delta, but as many SIM villages are accessible only by boat, these improvements have had a limited effect. Of the 40 villages in the SIM panel, just 15 have road access. All but three villages have their own school buildings (at least at the primary level), but many are in poor condition as villages do not receive funds for maintenance. Health access varies and ten communities have neither a village-level rural health center nor easy access to one nearby. For all SIM villages, the most dramatic improvement in connectivity has been the introduction of mobile telephone services. In 2013, mobile phones were virtually unheard of across Myanmar, but in 2017 all villages had access to 3G services and mobiles were ubiquitous across the panel.

Housing quality has improved significantly across the SIM panel, though a few notable exceptions exist

A large majority of research respondents reported that their houses are now of better quality than before Nargis, and that in recent years they have worked to improve them. Those who reported the most significant improvements tended to have either remittance income from a migrated household member, or multiple local income sources. In a small number of communities highly affected by Nargis, villagers reported that they did not see the point of rebuilding, as a future Nargis-like storm would destroy them all. In these villages, those households that could afford it invested in homes or property outside the village. Desire for better living conditions, realization of the importance of a sturdy home during a storm, and social pressure of comparing homes with their neighbors were the main reported drivers of housing improvements. In some villages, there was an increasing number of households taking on debt to improve or rebuild their home.

Social relations and leadership

By 2017, the negative social effects of Nargis and the aid effort that followed were largely dispersed, replaced in most villagers' minds by the forces affecting social change across Myanmar. Migration, national political change, a fraying of the tight-knit social bonds that tied village groups together,

and the introduction of local, albeit indirect, democracy, all affected social relations within SIM villages. Overall, social relations, defined as the level of unity within the community, ability to work together, and trust in community leadership, have coalesced in the middle. Villages, especially those highly affected by Nargis, that in 2013 had poor social relations have seen some improvements, while others assessed to have good relations in 2013 (especially those moderately affected) have experienced a decline. This reflects the uncertainty that exists within many villages as their country experiences massive change.

Village activity groups have evolved under the transition toward democracy, though some have struggled to maintain membership and relevance

The self-reliance of the Delta villages and focus on self-help as a necessary form of community activity has been well covered throughout the SIM series, and those instincts remained strong in 2017. Under new legislation, villages are not required to have cookie cutter standing committees, and organic groups have taken their place. Free funeral service organizations and other local charities have become particularly common, while independently created microfinance groups have recently emerged in three villages. These village-directed groups sit alongside committees linked to donor development programs which are now ubiquitous across the Delta, and self-directed economic groups, such as the agricultural labor groups, are now present in over a quarter of villages.

Other groups have declined, however—for example, youth groups which have suffered from a lack of membership as young people migrate out in search of economic opportunity. For those that remain, there has been an increase in the number of women included in their leadership. Also experiencing a decline were disaster risk reduction committees, now present in just four villages across SIM, reflecting both the lack of young people who had traditionally been active in these committees and the fact that most villages have not experienced a major storm in recent years and see little urgency for disaster risk management activities.

Relations between religious and ethnic groups are varied but overall have declined, due to both post-Nargis tensions and an increasing distrust between groups in recent years

SIM includes several mixed-ethnicity (Karen and Bamar Buddhist) and mixed religious (Muslim or Christian and Buddhist) villages. In both cases, despite all respondents reporting no major challenges to local social harmony, there were more frequent reports of tension between the groups. In Buddhist-Muslim villages, the communities do still attend each other's major religious festivals, but they live in *de facto* segregation, do not hire laborers from the

other religious group, and rarely cooperate on village development activities. In a small number of villages, Muslims reported they had been prevented from building a mosque or practicing their religion freely and openly. Karen-Bamar villages experienced similar issues, with the Karen seen by the Bamar as unified and self-supporting while the Bamar (often a minority in these villages) suffered. This links back to the post-Nargis period when the broader Christian community in Myanmar provided aid only to the villages' Christian households.

Following local elections in late 2015, village tract leaders have consolidated power at the expense of village-level headmen, though religious leaders and elders remain influential

Since 2012 legislation that reshaped local governance took effect, administrative influence has become increasingly concentrated at the village tract level. The 2015 local elections further consolidated this influence, and village tract administrators (VTAs) have an increasingly strong grip. Nevertheless, informal networks are still important, especially for those with the need to maintain a relationship with the township level, and have been enabled by the spread of mobile technology. Villagers' reported preferences for village leader characteristics also evolved, with a stated desire that leaders are educated, good managers, and speak English—though this was not borne out by local elections which saw fewer high school graduates elected than in the first local election in 2013/14. Finally, there has clearly been an expansion in the opportunities for women within local governance. Several villages had multiple female 10 household heads (who are the electors of VTA), and one tract had chosen a woman to be the VTA.

Recovery and resilience

Across SIM's 40 study villages, the research team evaluated that 25, or almost two-thirds, have now recovered from the effects of Nargis

Unsurprisingly, a higher proportion of moderately (72 percent) and lightly (80 percent) affected villages have recovered compared to 30 percent of villages that were highly affected. The assessment of whether a village had recovered was based on the extent to which old livelihoods were now delivering sustainable positive returns, the effect of new economic opportunities (both in the village and beyond) on the household, the current state of social relations, perceptions of local leaders, and the state of village infrastructure.

While villages have recovered, few are resilient in the face of another disaster: just six of the SIM panel villages are defined as 'resilient' and eleven more as 'somewhat resilient'

SIM sought to develop a working framework for resilience in the Ayeyarwady Delta and then to assess what factors increased, or compromised, resilience. Based on existing literature and the experience of previous rounds of SIM, resilience in the Delta was defined as the ability to both reduce the impact of a disaster and recover more rapidly when a disaster strikes.

The most important factors that affect a household's ability to recover faster in the immediate aftermath of a disaster were identified as the survival of assets, local job opportunities, remittance income, ability to manage household resources, aid, and the health and number of working family members. At the community level, diversified economic activities within the village, credit access, leadership and social networks, good infrastructure, and external assistance were the factors most important for recovery.

The ability of households and communities to improve resilience exists across sectors, though is often informal or even a by-product of actions done for other reasons

Developing resilience consists of two broad baskets of activities: those that reduce a household's or community's exposure to the threat of damage and those that improve protection of people and assets. These activities can either involve long-term planning that, over time, improves resilience or shorter preparation-type activities when a disaster is already in the offing. Further, within the context of Ayeyarwady Delta villages, all these activities happen at both the household and community levels.

To reduce exposure to natural disasters, income diversification and, for those who were financially able to, purchasing land or a second home in town were the major steps taken by households in the Delta. Adding a small business or having a migrant family member working in Yangon lessened the risk that any one shock could wipe out their assets and income. Efforts at protection for farmers and fishers are limited, given the relative immovability of their livelihood assets. Nonetheless, storing of paddy, seeds, cash, gold, and other valuable assets and documents in protected places (burying, storing in their home's attic, or keeping them in town were common methods) are perceived as important steps in disaster protection. At the community level, and especially for villages heavily affected by Nargis or those with active leadership, evacuation plans, community food storage, and the planting of trees as windbreaks were all steps taken to reduce and mitigate disaster effects.

Long-term implications for aid

The experience of villages across the SIM panel over more than nine years since Cyclone Nargis demonstrates the importance of post-disaster aid and some of the challenges such assistance has in helping households and communities rebuild. First, aid is not apolitical and can have lasting effects, positive or negative, on local social relations. The importance of appropriate targeting of aid is clear from the experience of SIM communities, and the issues caused by incorrectly targeted assistance have been a theme across SIM rounds. At the same time, the insistence of longer term aid projects to have women contribute to leadership structures and decision making has been an important enabler of new roles for women across various aspects of village life. Given these longer term effects of aid, it is clear that, as soon as is practicable, aid delivery must take a long view in its delivery. Lifesaving aid is clearly the primary concern for humanitarian actors, but as soon as possible, consideration for how the livelihood and social contexts have changed (both directly from the disaster and due to broader shifts) should play into aid delivery lest assistance be rendered irrelevant or misallocated.

For future aid to the Ayeyarwady Delta, the importance of climate change as a determinative factor of future activities is clear. Aid partners, government, and communities must work together to increase disaster preparedness, improve the resilience of local livelihoods, and empower community development that equips villages to withstand future climate shocks.

Post-disaster social impacts in the literature

As a longitudinal study over nine years in a panel of disaster-affected villages, the Post-Nargis Social Impacts Monitoring is an important contribution to the field of post-disaster impacts analysis. Every disaster is different, affects individuals and communities in different ways, and is followed by a different recovery response. Not surprisingly, therefore, many of the SIM findings are reflected in the literature, while others offer new insights. The most salient findings include the following.

Recovery is a continuous process, yet the direction of recovery cannot be predetermined with any certainty. Disasters also deepen poverty and can lead to lasting structural changes in the local economy. Any aid effort, therefore, ought to anticipate the need to adapt continuously. Two critical ingredients to recovery and resilience that require the attention of aid providers as well as social capital both within and across communities and with the local administration, and the quality and commitment of local leaders,

both formal and informal. The gendered impacts of natural disasters must also not be overlooked. On the whole, the post-disaster needs of women often do not receive the attention they deserve. At the same time, post-disaster aid delivery mechanisms can lead to an increasing role of women in local decision making. Consequently, aid that is not well planned or executed is likely to create, or exacerbate, social tensions that can persist over a long time.

A particular challenge is that disasters lead to greater debt, and not only of the poor. As a matter of fact, while aid is generally focused on the poor, other livelihood groups (especially larger farmers) also merit recovery support as they are an important employer of local labor. Over time, disaster-related debt can lead to a more inequitable distribution of land. Conversely, migration plays a critical role for households as it helps diversify income and makes households less vulnerable to shocks. Finally, unless local disaster risk management activities are linked with government structures and policies, they will not lead to resilience as community memory of the event often fades over time.

Final reflections

What would village life in the Delta be like today had Nargis not happened? It is not possible to offer an accurate answer to this question for a variety of reasons. This does not mean, however, that long-term trends and patterns of Nargis' direct and indirect effects could not be discerned. For this it is important to understand the level of development of the Ayeyarwady Delta compared to the rest of the country.

Despite being the rice bowl of Myanmar, the Ayeyarwady region has the third highest poverty rate in Myanmar; nearly one in two individuals in the region could be considered poor. This development deficit is not a result of Nargis; however, available data indicate high rates of poverty in this area (relative to other regions and states) years before the cyclone. The cyclone-affected townships in the Ayeyarwady region fare even worse than the region's average. All of them are in the lowest category with the least favorable wealth position. In other words, these townships are amongst the most disadvantaged in a region that is one of the most disadvantaged in the country.

A comparison of highly and lightly affected villages helps to pinpoint some noteworthy patterns. The differences in debt, leadership, and connectivity contribute to a marked difference regarding recovery, with lightly affected villages much more recovered than highly affected ones. Of these factors, debt is most closely related to Nargis, as the cyclone broke the debt-harvest-repay cycle that had been sustaining the main livelihood, farming, in the Delta. Other factors that have shaped recovery would be at play regardless but were accelerated by Nargis, such as mechanization,

environmental degradation, and weakening social relations. At the same time, post-disaster aid helped not just to build back, but to build back better, and thereby contribute to some reduction in the area's development deficit.

It can be surmised that the sample villages would still be poor today without Cyclone Nargis, but that they would be less in debt and have more assets at their disposal, which would enable them to take fuller advantage of the opportunities

the country's economic and political transformations are offering. In other words, though unquantifiable, Nargis left a clear and lasting mark on the economic prospects of the villages it destroyed. Sadly, this is a common outcome of any major natural disaster. And yet, the SIM series has shed unprecedented light on a recovery process from devastation that has had as many twists and turns, and as many paths, as the Ayeyarwady Delta itself.

1 Introduction

Myanmar in 2017: The Context of the SIM 5 Research

The immediate effects of natural disasters are clear. Lives are lost or torn apart, homes and village infrastructure are devastated, and both individual and community assets are damaged, in some cases beyond repair. In the twenty-first century, these effects are seen all over the world, seared into the consciousness of humanity. Response and assistance generally follow rapidly, with the country's own government, international governments, and a vast range of nongovernmental and intergovernmental organizations working to bring aid to affected communities.

But disasters also have much longer term impacts, and these effects on communities persist long after images of suffering have disappeared from the world's media. A major disaster can alter the socio-economic trajectory of a household, a community, and a region for at least several years, sometimes several decades, and sometimes, forever.

When Cyclone Nargis hit the Ayeyarwady Delta on May 2, 2008, it brought massive devastation. An estimated 140,000 people died in the storm, while damages and losses from the destruction are estimated at around US\$4 billion. In the weeks following the storm international actors began a wide-ranging humanitarian aid effort. To coordinate that response, the Government of the Union of Myanmar, the Association of Southeast Asian Nations, and the United Nations formed the Tripartite Core Group.

As part of its comprehensive monitoring system and to ensure it responded to the changing needs of Nargis-affected communities, the Tripartite Core Group developed the Post-Nargis Social Impacts Monitoring (SIM) project. SIM aimed to understand the changing needs and priorities of the affected communities over time, as well as how the

local socio-economy, social relations, and village institutions were evolving—both as a result of Nargis and due to the effects of aid provision. SIM research was undertaken in 40 villages spread across the Delta to provide in-depth information on how village life was changing after the storm.

Over the following two years, three rounds of SIM were completed under the auspices of the Tripartite Core Group. The first round, completed in November 2008, had assessed the immediate effects of Cyclone Nargis and the initial response. SIM 2 was undertaken one year after Nargis from May to June 2009, while SIM 3 was completed by May 2010, shortly before the Tripartite Core Group came to an end in July 2010.

Recognizing that the longer term effects of major natural disasters are frequently understudied and little understood, the Global Facility for Disaster Reduction and Recovery continued the SIM series. SIM 4 was undertaken in April and May 2013, in the same 40 villages studied in the earlier rounds. It began the process of understanding the continuing effects of Nargis on those who had survived the storm. How had affected villages recovered economically? Has village life returned to what it had been before Nargis? What other factors shaped a village's path to recovery?

With research in July and August 2017, SIM 5 returned to these questions, looking back over the nine years following Nargis' devastation to understand how villages have changed—and evaluating to what extent that change is directly due to Nargis, indirectly related to Nargis, or reflects other, broader, transformations in Myanmar. As in previous rounds, SIM 5 used a qualitative, village-level methodology of key interviews, focus group discussions, and participant observation, revisiting the same 40-village panel across eight townships (Annexes 1 and 2).

Alongside SIM's core research questions, taking stock of changes to a village's socio-economy, social relations, and development situation, SIM 5 added a new component in an effort to reflect on how Nargis, and the ensuing delivery of aid, altered the trajectory of communities and their recovery process. It has also sought to understand what the concept of resilience means in the context of Nargis-affected villages. It examined how villages have adapted to changes in the environment in the face of climate change, how they prepare for natural disasters, and what factors are most important for enabling faster recovery when disaster strikes.

Since 2010, Myanmar has undergone major political, social, and economic changes. The dissolution of the State Peace and Development Council in March 2011, began a multiyear process of change that included national elections in 2015, several local and by-elections, as well as significant economic reforms that have opened up the country to foreign business and investment. Together, these moves signaled that the country was steadily moving toward democracy and a market-oriented economy, signals reinforced in 2015 by the historic landslide election of Aung San Suu Kyi's National League for Democracy. All along, the economy has been growing rapidly.

Some of these broader issues directly affect SIM villages while others contribute only indirectly to the context within which villagers live and work. SIM 5 does not seek to explicate these broader changes nor does it offer policy prescriptions. Instead, by returning to 40 villages across the Ayeyarwady Delta and giving villagers the opportunity to reflect on their social and economic experiences since Nargis, SIM aims to improve global understanding of the long-term effects of natural disasters and the role of disaster relief.

Post-Nargis Recovery through Four Rounds of Research

Villages' paths toward recovery have evolved over time, differing not only by degree of affectedness, but also by location and by type of livelihood. This section summarizes salient findings from the first four rounds of SIM to provide a longitudinal snapshot of how the village context has evolved across the panel over more than nine years.

Setting the stage: The Post-Nargis Joint Assessment

The Post-Nargis Joint Assessment was the first post-disaster assessment that included a specific analysis of the social

impacts of the disaster. Undertaken within two months of the cyclone, the analysis was necessarily preliminary and tentative. It developed a set of hypotheses on forms of social impact that might play out in the post-Nargis period. SIM tracked these issues over time. Field visits during the assessment observed a high level of unity and social cohesion among survivors, who had no doubt been brought together by their common efforts to survive and rebuild.

The analysis also identified the risks of redistributing land away from small-scale farmers to those with larger holdings and of loan-based responses that would require already indebted villagers to take on additional debt. Furthermore, the analysis underlined the importance of working with informal local institutions and local leaders. Based on this analysis, the joint assessment report included in its guiding principles the need to involve communities at all stages of the relief process, including decision making and feedback on the quality of the relief and recovery effort; maximizing the use of local initiative, resources, and capacities; and building the capacity of local communities to participate in the relief and recovery effort.

Dashed hopes of a speedy recovery: SIM 1

SIM 1, conducted six months after the cyclone, noted that relief and recovery assistance had reached even the most remote villages, though levels of aid varied between and within villages. Aid appeared to be helping villages recover—there was a link between the amount of aid received and the speed of recovery.

However, the level of cyclone impact was a larger determinant of recovery. Even where larger amounts of aid were being delivered, many moderately or highly affected villages were not recovering quickly. This suggested that the scale of aid and/or its effectiveness was still insufficient. Although relief assistance had reached all villages, much more assistance was needed for communities to recover, particularly in the form of cash grants. Moreover, villagers thus far had had few opportunities to influence the aid effort, which had led to the provision of some kinds of aid not adapted to local needs.

Nargis had caused farming productivity and crop yields to decrease significantly. Reductions in harvests were driving increased debt burdens for farmers, many of whom could not repay old loans and also had to borrow for consumption. Fishing was severely affected too, as fishers who had lost their fishing gear were struggling to recover. This lack of fishing equipment affected those at every point in the fishing value chain.

Moreover, Cyclone Nargis drastically reduced the opportunities for paid work for laborers, who faced reduced demand for their labor from the bigger farmers and fishers who would normally employ them. Laborers received food aid but less livelihood support compared to other groups. As a result, many were facing immense difficulties in getting by. The most recurrent theme was an increasing debt burden. In every village studied, villagers were worried about being able to meet their loan repayments and having enough money for consumption in the following year.

Cyclone Nargis had a major impact on socioeconomic life in Delta villages. However, despite its immense shock, social relations and local capacity remained strong. Villagers worked together to overcome immediate challenges, which in turn strengthened social relations. Communities remained resilient and functioning. Nonetheless, SIM 1 concluded that if people's livelihoods and village economies did not begin to recover soon, there would likely be profound longer term impacts, such as migration out of Delta villages and a tearing of the social fabric. If people could not break out of the Nargis debt trap, there was also a risk of longer term redistribution of assets from many to a few.

Still a mixed picture: SIM 2

Cyclone survivors continued to prioritize livelihood assistance. However, a year after the cyclone, the needs of affected communities had evolved, with villagers also prioritizing health, education, and small-scale community infrastructure. This reflected a shift from emergency to longer term recovery priorities. As in SIM 1, aid in the form of cash or affordable credit appeared to be more effective—and was preferred by villagers—than in-kind assistance.

However, aid levels dropped sharply and were too low to enable cyclone survivors to adequately recover their livelihoods. Furthermore, aid providers continued to make aid-related decisions themselves, and aid distribution was formalized through official leaders and village emergency committees that were established for the purpose of distributing aid. Villagers often lacked clear information about aid, which led to cases of (perceptions of) misuse and local conflict over delivery.

There was little overall progress toward livelihoods recovery. Socioeconomic conditions remained challenging and were exacerbated by the wider economic environment. Farmers were unable to afford adequate inputs and cultivated their land less intensively. There appeared to be some progress with restarting fishing, though as most aid provided was small-scale fishing gear, this enabled fishers to earn a subsistence income, rather than reviving the fishing value chain.

Casual laborers also continued to struggle. The inability of big farmers to cultivate their land as intensely as before further reduced job opportunities for casual labor. Moreover, some farmers and fishers themselves became casual laborers, so competition increased for the jobs that did exist. Debt levels were still rising, and interest rates remained high. Farmers began to lose land to moneylenders as they failed to meet their debt payments.

Yet, social capital was still strong overall. Young people continued to play an active role in relief and recovery activities, such as repairing and renovating schools and pathways. Formal leaders played a strong role in aid-related affairs, though the roles of village elders in aid affairs had decreased somewhat since SIM 1. Similarly, the role of religious leaders had evolved, with only Christian and Muslim religious leaders engaged in day-to-day recovery activities. There was an increasing number of instances where aid-related tensions weakened social relations.

Deceptive indications of a recovery: SIM 3

By 2010, the steady decline in aid since the cyclone was now accompanied by a significant change in aid provider priorities. The decline of credit provision and fishing inputs was particularly noteworthy. Support for small and medium farmers remained widespread, but there were concerns that levels of aid were insufficient to help restore livelihoods. Overall, SIM 3 noted a significant disjuncture between aid provision and the needs of different groups in the community. Aid providers continued to be the main decision makers, determining both the type of project and the process of implementation. Accountability relationships between aid providers and the villagers remained limited, with little evidence of transparency measures working effectively at the community level.

There were signs of a recovery in the farming sector. Farming yields had rebounded since the disaster by over 15 percent on average and by many more farmers growing both monsoon and summery paddy. Simultaneously, however, intensive investments in the fishing sector during the previous year led to overfishing and a drastic reduction in output and employment. As a result, many fishers lost their traditional livelihoods and became casual laborers at a time when farmers were reducing their demand for labor even further. In almost half of SIM villages, laborers became significantly worse off than other villagers.

Debt continued to undermine the prospects for recovery. Across all occupational groups, the average maximum debt across villages two years after Nargis was higher than before

the cyclone. Farmers went to great lengths to remain current on at least their interest payments and were selling assets other than land in order to do so. The story of debt in the Delta two years after Nargis was thus one of continued asset depletion but not yet of widespread default.

Due to a strong social fabric, Ayeyarwady Delta communities stayed resilient despite the challenges. In most aspects of village life, there was little change and social relations were good. There were indications that women were becoming more empowered through their increased involvement in aid-related committees. At the same time, the role of youth in the aid effort decreased. Some signs of tensions between villagers and their leaders were reported, most of which related to aid provision.

Livelihoods fall backwards: SIM 4

Five years after Nargis, Delta villages still found themselves in a dire economic situation. This situation could not be attributed to the cyclone alone; multiple other factors were now influencing villages' paths to recovery, with more recent climatic shocks playing key roles. Highly affected villages were more exposed to these events. The combination of Nargis and these more recent events had affected livelihoods in some villages to such a degree that they appeared to have lost their ability to self recover. In 2013, most of the 40 sample villages were struggling and had yet to recover socioeconomically. Only six lightly and moderately affected sample villages were considered to be in good standing, while 16 were in poor standing.

Villagers in over one-third of the villages were caught in a debt trap, unable to repay even the debts that they had owed from before Nargis. Of the 30 highly and moderately

affected villages in the sample, only three moderately affected ones did not have repayment problems. Indebtedness was directly related to the degree of cyclone affectedness. Coping strategies had not changed over the previous three years but were being used more intensively. Migration continued to increase as a coping mechanism and as a way to escape job scarcity. Other forms of coping had potentially negative social and health consequences.

In about three-quarters of villages, social relations were considered good or fair, including in most highly affected villages. Where social relations were good, the community was organized and villagers undertook collective activities, mostly socioreligious tasks and regular community works. Where social relations were poor, villagers were divided into different groups, and communal activities occurred only within these groups. In most cases, poor social relations were a remnant of the aid effort.

At the same time, however, villagers had less time and fewer resources for social interaction. They also felt that relations were worse than before Nargis in about half of the villages. The passing away of religious leaders during Nargis contributed to strained social relations five years on, especially in villages with both Muslims and Buddhists.

The role of women and youth continued to evolve. With aid having largely ceased, momentum toward women's empowerment had evolved along new tracks. In some cases, women were making inroads in broader village affairs. In two villages, women were elected as ten household leaders in 2013, the first time this had happened. At the same time, SIM 4 saw a resurgence of youth engagement. There were more youth-led activities in many villages, potentially a reflection of the recent elections that had brought younger leaders to power.

2 Livelihoods

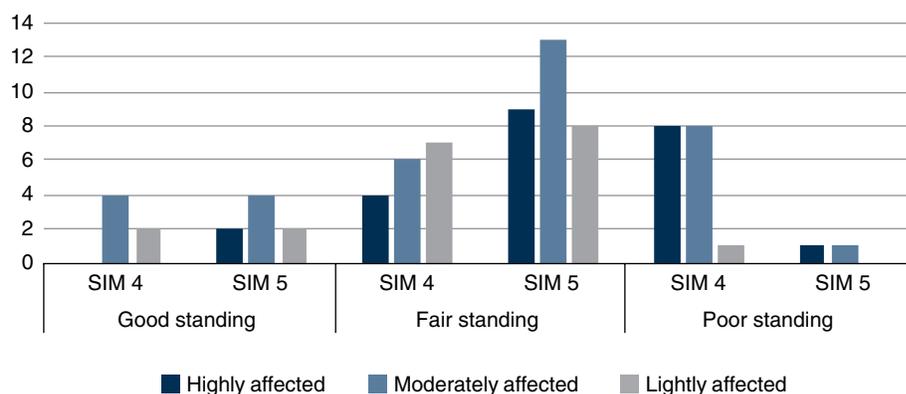
Previous rounds of SIM research highlighted the variability of villages' economic situations in the years following Nargis, with communities experiencing some improvements one round and then falling back the next. For example, farming returns captured by SIM 3 suggested the sector was on a positive trajectory, but by SIM 4, farmers were struggling again. SIM 4 also found that an increased labor supply, the result of fishers and farmers leaving their livelihoods, had led to lower wages and limited employment opportunities.

In contrast, SIM 5 research found that the economic situation improved for most villages, across levels of affectedness. The number of villages where the economic situation²

was 'good' or 'fair' increased from 23 in SIM 4, to 38 in SIM 5 (Figure 1). While farmers in particular face high income variation due to weather shocks, all livelihood groups reported positive changes compared to 2013.³

This improvement in economic standing for the SIM panel reflects a similar slow, but positive, evolution of socioeconomic conditions across Myanmar. In the Delta, Cyclone Nargis is no longer the defining livelihood issue for most communities, as more time- and location-specific issues have taken a central role. Other changes, including the evolution of market access, price changes, and especially

FIGURE 1: Economic Standing of Villages, 2013 and 2017



² Economic standing is defined as: "good," a notable increase in remittance levels and local job opportunities, i.e., most households have multiple working family members and few households in the village have high levels of debt; "fair," most households have at least one regular income-generation activity (i.e., a daily income), i.e., there is a medium level of migration compared to other villages,

and easy access to microfinance to invest in income-generating activities; "poor," few local job opportunities exist, villages with many households without multiple working family members, and limited access to credit meaning high daily interest rates.

³ Throughout SIM 5, time comparisons were made either to the period before Nargis or to the period following the summer paddy harvest of 2013. SIM 4 research took place following the Thingyan celebrations of April 2013.

Myanmar's internal migration boom, which has in turn affected labor availability, reflect broader shifts affecting communities across the country.

Economic activity for many of Myanmar's rural communities varies significantly depending on the time of year, and where in the country the community is located. Weather that varies dramatically from season to season, fish spawning patterns, and government regulations on fisheries all help shape the Ayeyarwady Delta's annual livelihood calendar. Table 1 provides an example of the types of economic activities undertaken by different households over the course of a year. This is an indicative rather than definitive map, but helps illustrate that while households may continue to have a primary livelihood, in reality most seek diverse sources of income across a twelve-month period. The calendar is presented from May–April, in keeping with both the Myanmar traditional calendar (where New Year's day is in mid-April) and the planting and harvest cycles described by farmers.

Farming

SIM 4 research found that farmers faced poor conditions⁴ in almost half (17) of the panel's villages, primarily in communities either heavily or moderately affected by Nargis (Table 2). This reflected how villages that had been badly damaged by Nargis had been unable to recover to pre-Nargis levels. As a result, many farmers faced a debt trap. There was also a significant difference between the worst-hit townships along the coast—Labutta, Bogale, Pyapon, Kungyangan, and Dedaye—where farming conditions were mostly poor, and communities in townships were further inland. SIM 5 research found a somewhat more positive, if highly variable, situation facing farmers where improving prices and the possibility of good yields are regularly undermined by weather shocks and poor quality harvests.

Table 3 captures a trend toward the middle as there was a clear reduction of villages with both good and poor conditions. In 2017, three-quarters of villages experienced fair farming conditions. Half of the highly affected villages as well as one-quarter of moderately affected ones were able to improve their condition from poor to fair.

⁴ Farming conditions are defined as: "good" = access to improved seeds, ability to grow both summer and monsoon paddy, alternative summer crops, and a high proportion of paddy land without flood risk either due to location or embankments; "fair" = good access to water for irrigation, access to improved seed, ability to invest in farming inputs, and a medium proportion of paddy land that was not flooded; "poor" = experiencing too much rainfall resulting in lots of fallow land due to flooding, lack of any embankments, and high incidence of snail and other pests damaging crops.

An overview of farming in the Delta

The primary crop across the Delta region is paddy rice, grown (depending on the location and on the farmer) across one or two harvest cycles each year. The monsoon paddy season is planted in June with the onset of the monsoon rains and harvested in October. Less reliant on additional inputs than the second summer season, the monsoon harvest also has higher prices and is the traditional primary crop for most farmers. The second 'summer' harvest is planted in November and then harvested between late January and early March. Requiring much greater investment (particularly in fertilizer and labor costs), summer paddy makes up for this with the high yields that offset both the expense of the second crop and the generally lower prices available in January. Among farmers interviewed, they reported that yields in the most recent season for monsoon paddy were approximately 45 baskets per acre. For summer paddy, however, yields were double that, with large farmers averaging over 90 baskets per acre.⁵ Within the 50 percent of SIM villages where summer paddy is grown, the farmers who can afford to finance the more expensive summer crop do so, though often only on their highest quality (and least flood-prone) land.

While farming activities are often perceived as a primarily male economic livelihood, within Delta households, women make vital contributions to the success or failure of a season's harvest. While the division of labor varies, men are generally responsible for the physical process of land preparation and planting, while women often organize the various inputs required, including hiring labor and/or machines; purchasing petrol, seeds, or fertilizer; managing cattle or oxen; and in the case of informal borrowing, arranging loans. Formal loans from Myanmar Agricultural Development Bank (MADB) are in the name of the registered land user, generally the male head of household. For women-headed households with land, the process is a little different, but women play a more active role in supervising laborers in the fields as they must manage the process of land preparation directly.

Production costs have increased

The costs associated with farming have consistently gone up, thus harvest price increases have done little to improve the condition of most farmers (Table 4).

Many farmers, especially those with more than a few acres of land, depend on daily wage agricultural labor during peak times of planting and harvesting. A smaller number of laborers are often hired seasonally to assist with land preparation

⁵ For the SIM study, large farmers are defined as those with ten acres of land or more, medium farmers as those with between five and ten acres, and small farmers as those with less than five acres.

TABLE 1: Livelihood Calendar

Activity/ Livelihood Group	May			June			July			August			September			October			November			December			January			February			March			April								
	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La	Fa	Fis	La						
Farming																																										
Subsistence fishing																																										
Livelihood fishing																																										
Open sea fishing																																										
Agricultural labor																																										
Other daily jobs																																										
Seasonal migration																																										
Unemployed																																										

Note: "Fa" means farmers, "Fis" means fishers, and "La" means laborers.

TABLE 2: Farming Conditions by Township, 2013 and 2017

Township	Farming Condition (2013)			Farming Condition (2017)			Difference		
	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
Bogale		5	4	1	6	2	1	1	-2
Dedaye		3	4		5	2	0	2	-1
Kungyangon		1	2		2	1	0	1	-1
Kyaiklat	3		1	2	2		-1	2	-1
Labutta		2	3		5		0	4	-3
Mawlamyinegyun	4				2	2	-4	2	2
Ngapudaw	2	1	1		4		-2	2	-1
Pyapon		2	2		4		0	2	-3
Total	9	14	17	3	30	7	-6	16	-10

TABLE 3: Farming Conditions by Degree of Cyclone Affectedness, 2013 and 2017

Affectedness	Farming Condition (2013)			Farming Condition (2017)			Difference		
	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
Highly affected	0	4	8	1	9	2	1	5	-6
Moderately affected	4	6	8	1	13	4	-3	7	-4
Lightly affected	5	4	1	1	8	1	-4	4	0
Total	9	14	17	3	30	7	-6	16	-10

TABLE 4: Average Cost of Production by Acre (in lakhs⁶)

Farmer Size	Monsoon Paddy			Summer Paddy		
	Before Nargis	2013	2017	Before Nargis	2013	2017
Large	0.8	1.1	1.6	1.2	1.6	2.3
Medium	0.7	1	1.4	1.2	1.4	2.2
Small	0.7	1.2	1.3	1.2	1.6	2.1

or crop care while the paddy is growing. Since SIM 4 and across all the villages in the panel, labor costs have increased significantly due to the outward migration boom in recent years as well as the expansion of nonfarm jobs that have reduced the available supply of labor.

The higher costs of hiring labor have had particular negative effects on medium farmers, who are less able to fall back on family labor (the coping strategy of choice for smaller farmers) and do not have the financial options of larger farmers who can more easily access capital, choose to rent out farmland, or even sell land to raise cash. The challenges of paying for labor are such that farmers of all sizes have begun to seek alternatives that reduce their reliance on workers, even if they require larger investments.

One result of this search for alternatives has been the expansion of mechanization. The number of machines used in agriculture, ranging from small, two-wheeled tractors to larger harvesting and threshing machines has expanded significantly. The uptake in use has been driven by both farmers' desire to reduce labor costs and the increasing availability of financing arrangements, particularly hire-purchase schemes supported by government and/or donor programs. The purchase of agricultural machinery, especially larger machines, also has a multiplier effect, as such equipment is often rented out to other villagers, reducing labor costs for other farmers while helping the owners recoup their investment more rapidly.

Moreover, the cost of production has been driven up by expanding fertilizer use. Farmers across the panel reported using more and more fertilizer to ensure that yields

⁶ One lakh equals 100,000 Myanmar kyats (K).

remained high, while some also have begun to use chemical weed killers and pesticides as an alternative to hiring laborers to weed the paddy fields. Such new techniques, quite apart from any effect on the harvest, have negative environmental impacts, affecting water quality in local streams and rivers as well as fish stocks. Fishers across the SIM panel often attributed (anecdotally) declines in catches to water pollution from agriculture. As well as these enabling inputs, seed costs have gone up as farmers are more likely to purchase higher yielding seeds rather than rely on seeds from their own harvests.

Yields have been variable

Cost of production increases have not been met by consistent improvements in yields. Instead, farmers have faced extremely variable harvests due to exogenous factors. Table 5 shows how yields for monsoon paddy have evolved in the years following Nargis. SIM 5 data indicate that yields have generally recovered to pre-Nargis levels. However, this does not capture the variability of farmers' experiences.

TABLE 5: Monsoon Paddy Yield Since before Nargis by Degree of Affectedness (baskets per acre)

Affectedness	2007/ Pre-Nargis			
	2007	2008	2013	2017
Highly affected	47	22	32	46
Moderately affected	44	31	33	42
Lightly affected	45	37	42	47

Farmers reported that for every good harvest they experienced, they faced one or two where they had little or no return due to problems with weather or other shocks. As shown in Table 6, the difference between a good harvest's yield and a poor one is significant, with yields collapsing almost 50 percent. Some farmers reported that in particularly bad years, they do not even bother to harvest their crop as the cost of labor outweighs any potential return.

TABLE 6: Monsoon Paddy Yield Variability by Degree of Affectedness (baskets per acre)

Affectedness	Worst Yield in the Last Five Years	Best Yield in the Last Five Years
Highly affected	29	47
Moderately affected	23	46
Lightly affected	25	55

Variable weather and its effect on both yields and harvest quality have the power to wipe out all positive gains. Weather shocks were common across the SIM panel, with varying levels of affectedness depending on the year, time

of year, and location. The most common weather shock was flooding, which villagers, especially those living along the banks of larger rivers, reported was an almost annual challenge. One village flooded every month when the tides were high. Half of the SIM panel reported 2016 monsoon flooding had negatively affected their harvest's yield and quality. In eleven villages, some farmers told researchers that they had chosen to let parts or all of their land lie fallow during the 2017 monsoon (either from the beginning of the season or choosing not to replant after an early shock), as they did not want to risk taking out additional loans that they were not sure they would ever be able to pay back.

Other weather shocks included unexpectedly timed rain (i.e., before or after monsoon) which damaged crops, hail, and, perhaps surprisingly, drought. The lack of rain in the Delta outside of monsoon means that many communities face water shortages in April and May, challenges that have worsened in recent years due to shorter (albeit more intense) monsoon periods. Pest shocks, associated with damaging flooding, have worsened outcomes further.

Prices

Prices for paddy have increased since SIM 4, with farmers reporting that monsoon paddy in 2016/2017 had an average price of 6.3 lakhs per 100 baskets (Table 7).⁷ This compares to 4.3 lakhs per 100 baskets found in SIM 4 for higher grade Bay Gyar paddy and just 3.1 lakhs per 100 baskets for lower grade Achon paddy. Part of the change is attributable to the phasing out of lower quality paddy and farmers' focus on better seeds. However, farmers also reported that better access to markets and lower transportation costs were positively affecting the price they received.

TABLE 7: Average Reported Price of Monsoon Paddy (lakhs per 100 baskets)

Year	2007	2008	2013	2017
Price	4.05	3.15	3.70	6.34

This positive picture for prices is, however, tempered by two issues. First, there is significant variation from harvest to harvest. The variation in yield is shown in Table 6, and Table 8 shows the best and worst prices large and small farmers have received for both monsoon and summer harvests since Nargis, as well as the spread between them. The

⁷ Pre-2017 numbers are an average of prices for the two most common types of paddy, Bay Gyar and Achon. 2017 prices are an average of prices for all paddy types. This change reflects more seed diversity.

TABLE 8: Variance in Harvest Prices over Time (lakhs per 100 baskets)

Large Farmers	Best Price since Nargis	Worst Price since Nargis	Spread
Monsoon	7.3	4.9	2.3
Summer	4.6	3.3	1.4
Small Farmers			
Monsoon	6.9	5.1	1.8
Summer	4.6	3.3	1.3

data indicate that while in some years prices are high, there is little consistency and farmers face frequent swings in the amount they can expect to earn from their harvests.

The second issue is harvest quality, which is linked to both yield and price, but not fully dependent on either. For example, some farmers reported that in some years their paddy harvest had average yields, but the quality was poor, generally meaning high moisture rates, discoloration of the rice, and higher risk of mold, resulting in low prices and a resulting loss overall for their investment from that season's crop.

Timing

Most farmers continue to be unable to store paddy themselves and must sell their harvest almost immediately. This means they are subject to the market, as described by the broker, at a time when paddy is most available and the price is lowest. A frequent complaint is that if they were able to store the paddy themselves, farmers could sell later in the year when prices have improved from their post-harvest low point. Farmers reported that two or three months after the peak harvest season, the price for paddy, especially the highest quality (i.e., export) varieties, could be 15–50 percent higher, depending on the year, than what they are normally able to sell their crop for. So, for paddy sold at 6 lakh per 100 baskets, the price 2–3 months later could be anywhere from 7 to 9 lakh per 100 baskets. For lesser quality paddy varieties the price difference is less pronounced as brokers are less interested in storing these types.

Factors contributing to farming outcomes

Location

Beyond challenges posed by weather shocks, variable yields, and fluctuating prices, the outcomes of farming are influenced by several other factors. Perhaps the most important of these is land location. Previous rounds of SIM research

found that the quality of soil was an important determinant of what a farmer could expect his land to produce. In SIM 5, in large part due to more frequent flooding across the SIM panel, soil quality's importance has declined and the location of a farmer's land (i.e., whether it is at a higher elevation away from major rivers) is now the most important determinant of yield. Land at higher elevations produced more reliable yields, even if the soil was not necessarily as fertile as some low-lying plots. As discussed in the following chapter, this change is reflected in land value, with plots deemed to be in good locations having significantly higher sale prices.

Training

Trainings were identified as important to helping farmers counter a lack of information available on improved farming methods. While Myanmar does have an Agricultural Extension Department, it is chronically understaffed and underfunded. No village reported receiving assistance from the department unless it requested advice on a specific issue, such as one village which asked for help dealing with a snail infestation (an issue the department was unable to resolve).

Instead, extension services and agricultural trainings fall to three groups. First, there are the many non-governmental organizations (NGOs) active in the Delta, many of whom have focused on improving the quality of the seeds used by farmers.⁸ Such efforts have led to yield improvements, in some villages increasing the number of harvested baskets per acre from 35 to 55. Second, there are the companies selling inputs to farmers. Many of these, especially fertilizer salespeople, also provide information on best practices, though there are clearly conflict of interest issues at play. Finally, there are a range of social enterprises seeking to commoditize agricultural extension via soil testing kits, demonstration plots, and other extension products. While farmers reported mixed results from all three types of actors, improved seed was recognized as an important first step, as was improved knowledge on how much fertilizer to apply and when.

The availability of trainings is independent of the degree of Nargis affectedness. Of the twelve villages where extension services and agricultural training were reported, four were highly affected, five were moderately affected and three were lightly affected.

⁸ The multi-donor Livelihoods and Food Security Trust Fund has a large seed program working with multiple NGOs across the Ayeyarwady region.

Adaptions to evolving farming context

Changing farming methods

Across SIM villages, farmers are taking steps (such as leaving flood-prone land fallow, or attempting to build embankments) in an effort to respond to the changing context for their livelihoods, namely the progressively worsening climate issues (as reflected by increased flooding and more pest problems).

The other main livelihood adaptions have been attempts to reduce reliance on hired labor such as altered farming practices (e.g., broadcasting seed rather than transplanting seedlings and increasing fertilizer use), seeking alternative sources of labor (such as relying solely on family members), or investing in equipment or inputs that require fewer workers.

“The soil has become sour and we have to use more fertilizer; if we do not use it, the plants will not grow well.”

—Farmer

Embankments

In response to flooding and its associated effects on farming livelihoods, farmers across SIM villages perceive a need for embankments that can withstand flooding and protect harvests. Until recent years (and as shown in earlier rounds of SIM), villages prioritized transportation infrastructure such as roads and improved jetties that enabled improved market access.

In SIM 5, however, when asked what infrastructure their village still needed, embankments were clearly a higher priority than in the past. Across the panel, six villages have built their own embankments since Nargis (at least two villages in the last two years), financed and constructed by (groups of) farmers and serving to protect the group’s paddy fields (Case Study 1). Another six villages have older embankments built by the government before Nargis that protect both the village itself and the surrounding paddy fields. Of these villages with embankments, six reported that they were in poor condition and needed repair. Another five villages without embankments said they viewed them as a high priority. The effect of embankments is clear: of the twelve villages that

CASE STUDY 1: A Farmer Invests in Embankments to Save His Livelihood

Small farmer Ko Aung Tun owns two acres of paddy land and rents land from other farmers as well. He lives with his parents, both 65 years old, as his relatives have started their own families. Before Nargis, his parents bought five acres of farmland together with their relative, and the relative took three acres and his parents took two acres. In those years, his job was looking after the family’s flock of ducks while his parents farmed.

In 2008, right before Nargis, he took over farming responsibilities. Nargis destroyed the paddy, leaving the family with K300,000 in debt for agricultural inputs. But in the months following Nargis, the family did not have problems with their basic needs thanks to external assistance.

In 2009, the family started farming again but his parents’ health had begun to worsen and they could no longer work in the fields. Alongside his farming, he also worked as a casual laborer when the planting season ended, and as a carpenter. Once he even went to Rakhine state and earned K6,000 per day for two months as a carpenter, returning only when the planting season arrived. As his land is in an area that floods regularly, he can plant only in the summer season. So, during the monsoon season, he works as a permanent farming laborer and sometimes gets payment for the season from the farmers up front, though the total is never more than K300,000.

By 2013, there were more credit sources available and Ko Aung Tun took on more debt. While he was able to repay loans taken from two suppliers, his third loan caused him problems. He often had to take a bridge loan from a private money lender with 5 percent interest per month in order to make the required payments every two weeks. In 2015, his parents’ health was getting worse still and they had to see the doctor in Pyapon. He took on even more debt that, even though he is working more and more, he cannot repay. Now, he has a debt of K 1.2 million to repay.

However, Ko Aung Tun is hopeful that things will improve because of a new embankment around his paddy field. Last year, having witnessed a large farmer build protective embankments to prevent monsoon flooding, he built his own embankments around his fields. At the time of the SIM research the seedlings were in good condition. He was hoping that he would be able to repay some of his debts. The farmer said that two good harvests in a row would allow him to become free of debt.

currently have embankments, all but one reported that farming conditions in the village were good or fair, and all but three were also considered recovered.

Diversification and migration

A wide variation in yields from harvest to harvest has also led to some changes in farmers' behavior, with farmers beginning to diversify their income sources. In previous rounds of SIM farming, households were much less likely to diversify than fishers or casual laborers. Farmers' reticence to diversify reflected both a comparatively reduced need to migrate as a coping strategy (given land's value as an asset) and the farming-specific need to remain close to their land during the growing season. For the first time, SIM 5 found a notable expansion in the number of farmers diversifying their income sources, especially in the 'off season'. For farmers who do not plant summer paddy, this begins in November and ends in April; for those planting summer paddy, the low season is from February to April. For most of these farmers, diversifying either meant doing local casual labor jobs, or seasonal migration to the township center or to Yangon.

"This year, I diversified the business and I am both raising ducks and planting betel vines. Prices of everything we buy are increasing and it is not good to depend on farming only."

—Farmer

Fishing

Fishing in the Delta

Three types of fishing take place in the Ayeyarwady Delta. First, there is subsistence fishing conducted on a very small scale, generally by landless, asset-poor households in the small streams that crisscross the region. These fishers also sometimes fish in paddy fields when they flood during the depths of the monsoon. They fish using lines or small nets from man-powered canoes. Typically, their catch is used for their own consumption (either fresh or dried for future use) though they might sell some to the local fish broker/collector if they have excess. In previous rounds of SIM, subsistence fishers made up a small but measurable proportion of most villages' population. By 2017, due to the increased availability of employment and expanded migration opportunities, there are now very few who fish at subsistence levels for their primary livelihood, though it is still common as a secondary activity, especially during periods of little agricultural activity.

Second, there are the small-scale fishers who either work independently or in small groups of family members or

friends. These can be further divided based on location. Some, living in villages that dot the coastline, fish primarily in near-offshore waters of the Bay of Bengal. Their catch tends to be larger fish and, as shown later in this chapter, these fishers experience greater returns from fishing. The second group are fishers from villages that lie along the major rivers forming the main waterways of the Delta. These rivers can reach a mile wide and have traditionally provided a sustainable livelihood for the fishers living along their banks, though since Nargis this livelihood is on the decline. Both of these groups use a range of net sizes, generally working from small, uncovered motorboats with 'fishtail' propellers. The proportion of this sort of fishers in any given village varies depending on the village's location, but they are by far the most common type of fishers across the SIM panel.

Finally, there are the 'employed' fishers, generally landless laborers who have left their village and work in town centers for larger scale fishing boats. These boats fish further offshore and are generally away at sea for a few weeks at a time. While not a traditional village-level livelihood, improved access and social networks in some villages have meant that subsistence or small-scale fishers have increasingly turned to employment on fishing boats to either supplement or replace their other livelihood.

In fishing households, the act of setting and retrieving the nets is normally done by the male head of household and/or the eldest son. If additional labor is required, households try to hire labor, but as catch sizes have dwindled it has become more common for women to go on the boats, especially when retrieving the nets. Once the catch is landed, women sort the fish into categories and determine which will be sold, which will be eaten by the household, and which will be processed (either for consumption, sale as fish paste, or used as bait). Women also participate in repairing nets. The physical requirements of fishing from a boat mean there are few women-headed households who fish in this way, but some do engage in subsistence fishing using small boats and nets that do not require great strength, expensive licenses, or the need to venture far from the village.

What fishers catch

The Ayeyarwady River, its Delta, and the offshore waters hold a wide variety of fish and seafood species. For the purposes of this report, 'fishing' as a livelihood includes the catching of prawns, shrimp, crab, and langouste as fish. The most common fish species is the hilsa, but fishers catch, eat, and sell a wide variety of fish both as fresh and for drying or production into fish paste (*ngapi*, a staple of the Myanmar diet).

Returns from fishing

The costs associated with fishing have increased

Since Nargis, the costs of being a fisherman have steadily increased. In the years following the cyclone, there was the immediate need to reinvest to replace lost boats, engines, and nets. In some villages, every fisher lost all their livelihood equipment and was forced to start from scratch. Some received assistance from external sources, Myanmar or international, while others sought other ways to restart their livelihood. Several fishers interviewed spent the years after Nargis working in Yangon or elsewhere in order to save enough to buy a new boat and equipment.

As time has passed and in response to reduced catches, the fishers continually invested in new equipment so as to sustain their livelihood (Case Study 2). Improved boats and engines allow fishers to go further afield, reaching fishing plots where catch levels are highest. Fishers are also using nets with a tighter weave, allowing them to catch smaller fish, though this practice comes with significant sustainability concerns.

In recent years, changes to license fees have accounted for more and more of the ongoing costs for fishers. Licensing rules vary significantly, not just depending on the type of fish being caught or the types of nets used, but from township to township as well. Township-level fisheries departments appear to develop their own licensing procedures.

For various fish types, these rules can range from a simple K5,000 licenses for individual fishers to K2.5 million concessions to large businesses which subcontract smaller fishing enterprises. The licensing structure often changes on a yearly basis, making long-term planning for village fishers a challenge. Further, it is becoming costlier to obtain licenses and there is little benefit to doing so—when the fishers face a problem, such as when large fishing boats tear up their nets, the fisheries department offers no support.

The income from fishing has remained flat

Fishers broadly reported that increased prices and diminished yield offset one another, and the net effect is that returns of fishing have been essentially flat in recent years.

Stagnant yields . . .

In most villages with a substantial number of fishers, low and unchanging catches were consistently reported no matter what fish or net was being used. The few exceptions to this were in villages that lie directly on the coast and have access to deeper water and open ocean. For villages along the Delta's major rivers, reports of declining catches were universal (Table 9). Prawn catches were reported to have recovered back to 2010 levels, though catches for most types of fish remain a fraction of what they were before Nargis.

Fishers attributed a range of explanations for the reduced catch levels. The two most commonly cited were increased

CASE STUDY 2: New Nets Lead to Improved Earnings for a Fisher

The primary livelihood in a village in Bogale township is fishing; there are only a few farming households. During Nargis, all the houses in the village were destroyed and it took a year for the village to be reconstituted. One fisher, U Zaw Win, has four young children. He is the only family member working, though his wife helps him collect the fish after the catch.

Nargis destroyed his nets and boat. In the years following the storm he worked as a farm laborer. In 2009, he borrowed K80,000 to buy a net for hilsa fishing. He also borrowed a boat from a fisherman, but this meant that for every four times other fishers went out, he could only go out once. As a result, he could not earn a living as a fisher.

So, at the end of the hilsa fishing season U Zaw Win went to Yangon to work as a casual laborer. In 2013, an NGO provided eleven boats to village fishers who did not have one, including U Tin Khine. He also bought himself a new net. From 2013 to 2015, the fish catch was good because of the new net.

By 2016, the fish catch had declined, a problem he attributed to weather variation, and the fisher decided to get a new “Kyar” net. He took a loan of K500,000 to pay for the license fees and the new net from the village fish collector, and as part of his repayment sells his fish only to that collector. Although he is aware of the difference in price between the village and township fish collectors, his engine boat is not sturdy enough to go to the township.

It has been five months since U Zaw Win started Kyar net fishing and his family is one of the better-off households in the village. He said “though the debt from purchasing a license is always between K400,000 and 500,000 we can pay it back fully every year.”

TABLE 9: Yields of Hilsa (viss per year)

	Before Nargis	2008	2009	2010	2011	2013	2017
Yield	100	100	100	75	48	40	45

“We cannot now say how many viss we catch; instead we can say how many individual fish we catch.”

—Fisherman from village on the banks of a river that has experienced a significant decline in catch

competition from fishers from other places, including larger fishing businesses from the township, and a perceived decline in water quality. The latter was blamed on both changes to the rivers’ flow which had seen the water become more brackish and also on fertilizer-polluted run-off from farmers’ fields. Other common issues include lots of garbage being found in nets (fishers in several villages reported they sometimes catch more plastic waste than fish) and that tides, and the resulting catch, have become less predictable in recent years.

... are offset by price increases

Nonetheless, declining catches have been offset for many fishers by significant increases in the market price for fish, especially prawn. This contrasts to SIM 4 which found a similar narrative on catch decline, but no counterbalancing price increases. In 2017, the price has been buoyed by a variety of factors (Table 10). First, improved market access has reduced the number of middlemen for fishers in many villages. In one village, the lobster fishers now bypass township-level markets entirely and sell directly to a broker in Yangon for several times the price available to them locally. Second, fish scarcity has driven prices up. This scarcity reflects both the reduced catch and a reduction in the number of fishers. Finally, for some fishers, increased investment in their fishing equipment allows them to catch different types of fish for which there continues to be a strong market. At the same time, many villages reported that market prices for seafood catches with low barriers to entry, especially crab, had increased as well.

TABLE 10: Prices for Hilsa (kyats per viss)

	Before Nargis	2008	2009	2010	2011	2013	2017
Price	16,700	17,200	20,250	24,650	25,900	30,400	31,400

TABLE 11: Fishing Conditions by Degree of Affectedness over the Last 5 Years

Affectedness	Good	Fair	Poor	Total
Highly affected	1	6	1	8 (of 12)
Moderately affected	3	4	1	8 (of 18)
Lightly affected	1	0	1	2 (of 10)
Total	5	10	3	18 (of 40)

Contributing factors

Fishing’s profitability is very much dependent on village location. Fishing villages along or near the coastline reported better catch levels than those set on the banks of rivers forming the Ayeyarwady Delta. Further, transportation improvements for these coastal villages, including several newly accessible via road, has meant improved market access and accompanying higher prices.

Fishing and the degree of affectedness are linked in that a larger proportion of highly affected villages have fishing sectors. Of the 18 SIM villages where the team was able to evaluate the condition of fishing,⁹ eight were highly affected (of twelve highly affected villages overall) while just two were lightly affected (of ten). However, as Table 11 shows, beyond this linkage there does not appear to be a correlation between the degree of cyclone affectedness and the condition of the fishing sector over the past five years.

Adaptions to the evolving fishing context

“It takes time to return to fishing. We had to try hard to go back because of the frightening experience in Nargis”

—Fisher from Zin Ywe Gyi

The number of active fishers in SIM villages has gone down. Exact figures are not reported, but fishers, village leaders, and the research team itself all reported that there has been a notable decline in the number of households that have fishing as the primary livelihood.

⁹ Fishing conditions are defined as: “good,” prices have increased and remained strong, villagers have been able to invest in motorboats as well as improved nets, often with a tighter weave; market access has improved and fishing license costs have declined; “fair,” prices are strong, license costs have declined, and fishers have access to improved nets; “poor,” catch has diminished significantly and the number of fishing households has declined, almost disappearing as a livelihood in some villages.

The expansion of larger scale fishing enterprises based generally at the township level has contributed to this decline. Fishers complained that large fishing boats now fish in shore and along the river rather than staying offshore. For those fishers who remain in the village, diversification is very common, with many choosing casual labor locally given improved wages. Some fishers choose to migrate, either seasonally during the low fishing period or, for families with multiple working adults, one person may migrate permanently to Yangon or further afield.

A lack of support

Interviewed fishers also noted that they have received little assistance in recent years, highlighting the inequity between livelihood assistance programs for farmers and the paucity of fishing-focused activities by both donors and the government. This was linked to a growing anger over license fees, with fishers feeling that despite increasing costs, they received no active support from the fisheries department and when wronged, they had no recourse. A common complaint was that when, as often happens, offshore fishing boats run over their nets, damaging or destroying them, there is no one for the small fishers to turn to for justice.

Problematic fishing methods

Certain fishing methods in the Delta pose broader challenges for both the environment and future catches. The use of poison, explosives, and car batteries in fishing (the former kills fish via the concussive force while the latter kills via voltage) are indiscriminate and can damage river beds and other animal life. These methods are illegal, but remain common practice, and have been applied more frequently since Nargis.

Labor

SIM 4 found casual laborers facing a dire situation. While in the immediate aftermath of Nargis, food aid had meant that laborers faced reduced food insecurity, in the medium-term agriculture's stagnation and lack of secondary livelihood opportunities were placing an increasing strain on laborer households. Particularly in moderately and highly affected villages, the socioeconomic well-being of laborers was closely tied to that of farmers and their village's overall economic condition.

By SIM 5, the situation evolved and of the three main livelihood groups, laborer livelihoods are in many ways the most fully recovered since Nargis. Their improved position is a reflection of three major interlinked trends that exist across the SIM panel and across much of Myanmar: higher wages

for agricultural jobs, new job opportunities, and expanded migration.

While a variety of new job opportunities for laborers existed across SIM villages, new livelihoods were especially apparent in communities with improved connectivity to township centers. The implications for laborers is that there are both expanded opportunities to work for themselves rather than for a business and that they have improved access to better jobs in town rather than being restricted to opportunities within their village.

Agricultural labor

Peak versus non-peak activities

Agricultural labor in the Delta region can be divided between peak and non-peak employment. During nonpeak times (most of the year) most small and medium farmers require only a small handful of laborers—and some small farmers use only family labor in these periods. The predominant nonpeak activities tend to be preparation before planting (including rebuilding paddy walls and irrigation channels) and the weeding and crop care that takes place before the harvest. For these activities, larger farmers often hire seasonal or permanent laborers who are paid either monthly or for the whole season.

Since before Nargis, there were two peak seasons for agricultural labor: the monsoon planting and monsoon harvesting season. The expansion of summer paddy crops to more and more farmers has brought a third season: summer paddy harvest.¹⁰ The first monsoon peak season occurs in May and June and involves the planting and transplantation of paddy seedlings. In recent years due to flooding or other shocks, a farmer may need to replant at least once, resulting in increased job opportunities for laborers who do not migrate.

The monsoon harvest is in September and is the period of highest labor demand as there is often just a short window for farmers to harvest their crops. The second harvest period lasts from late January till March.

Wages

Wages across the SIM panel have increased over the previous four years, and in some villages peak season daily wages have more than doubled their 2013 levels. Table 12 highlights how average labor wages across villages during peak seasons have changed for both men and women since before Nargis. These changes have been driven by a range of

¹⁰ Farmers use 'broadcasting' methods to plant summer paddy crops, so little additional labor is required.

TABLE 12: Changes in Wages 2007–2017

Male Labor Wage (kyats)						Female Labor Wage (kyats)		
2007		2013		2016–2017		2007	2013	2016–2017
Daily	Monthly	Daily	Monthly	Daily	Monthly	Daily	Daily	Daily
1,947	58,500	2,693	76,429	4,988	87,015	1,383	1,832	4,138

factors that can be broadly categorized as labor action and farming context.

Labor groups and advance wages

There are two labor actions that have affected wages and the relationship between farmers and laborers. The first is the expansion of labor groups. Prior to Nargis labor groups were active in three villages; now there are labor groups in eleven villages, including two groups formed in recent years that focus on nonagricultural labor. These groups, made of up of at least 20 but often as many as 50 laborers, work as a team and are led by a foreman, usually a relatively well-off and skilled laborer with a strong network beyond the village. Two groups are led by women and all include both men and women as workers. There is gender pay equality within the groups.

According to both farmers and laborers, labor groups represent an improvement over individual hiring. Farmers benefit from risk reduction, namely the assurance of a large number of workers in a timely fashion to plant or harvest with the reduced burden of finding workers and ensuring they show up. For laborers in the group, they get more and more certain job opportunities, regular wages that are higher than individual wages, the freedom not to worry about finding the next job, and prearranged transportation to the work location even when it is in another village or even the next township. For example, if wages for the individual were K4,000 per day, workers in a group can earn between K5,000 and K7,000 for the same activities, thanks to the increased productivity associated with group labor. Also, with the foreman in charge of finding employment for the group across village tracts and townships, the season for high agricultural labor demand expands from two months to four months.

The second labor action has been the expansion of advance wage payment by farmers to secure the services of laborers during peak times. Well before the planting or harvesting seasons, farmers provide advance amounts in exchange for a promise that the laborer will come and work on their fields at a designated time. For the farmer, this is meant to ensure that labor will be available, while for the laborer it provides cash up front at what otherwise is a low season for agricultural jobs. However, in practice farmers face difficulties enforcing the informal contract with laborers not showing up or demanding additional wages. The lack of

enforceability facing these arrangements has contributed to the attractiveness of labor groups, where the leader's reputation ensures attendance.

Other factors affecting agricultural labor demand

Demand for agricultural workers has evolved in response to a number of changes in farming practices—which in turn have been caused or exacerbated by changes in labor supply. For example, as labor has become more expensive, farmers have turned to mechanization, broadcasting instead of seedling transplanting, and increasing the use of chemical additives to reduce their labor costs. Some farmers have even left some of their land fallow because it was too expensive to hire labor.

At the same time, other farming changes have resulted in increased demand, such as the introduction of a second summer paddy crop, or improved the position of workers, such as improved connectivity allowing workers to access other employment opportunities. Overall, demand for labor has outstripped supply leaving laborers in a stronger position and farmers scrambling for new ways to reduce labor costs.

Changes to local livelihoods

In previous rounds of SIM, nonfarm enterprises that existed in villages tended to offer just basic retail goods. Villages had small grocery shops, fertilizer shops, or other business catering to either basic needs or servicing the three primary livelihood groups. By SIM 5, location was a key indicator of the extent of new opportunities for laborers.

Various nonfarm enterprises have declined, particularly those that required substantial labor. Charcoal making, salt production, fish paste production, and nipa palm thatch making were all fixtures of the pre- and post-Nargis village economy through SIM 4. In 2017, however, small enterprise owners and laborers reported that these businesses have declined or disappeared entirely as new opportunities had emerged for laborers.

At the same time, there has been a noticeable increase in the number of nonfarm small enterprises active in SIM villages

CASE STUDY 3: Entrepreneurship Improves Livelihood Outcomes

A village in Bogale township, where most households are farmers, was moderately affected by Nargis. In the years following the cyclone, one household stopped farming paddy entirely, turning to new livelihood activities.

Prior to Nargis, U Mg Mg was a well-off farmer: he owned over 20 acres of land and two boats while also working as a rice broker. He had a small grocery shop that he had run for 13 years. In 2015, after several years of bad harvests due to bad weather and expensive labor, he decided to sell his land to another farmer in the village. He told him to pay for it when he had enough money. Meanwhile he continued to work as a rice trader. He then also sold both his boats: after Nargis more farmers began to own boats and sell directly to Bogale town, reducing the income he could make by rice trading.

Prior to Nargis, their grocery shop was the only one in the village and benefited from being near the village's high school. Though the shop was destroyed during Nargis, the family did not lose the gold they had saved and was able to restart their business by pawning gold. In 2009, he decided to recover these expenses by starting a betel business.

U Mg Mg planted 2,600 betel trees on the plot of land where they live. From these trees, he now gets K15,000 in daily income. He had decided on betel because his village was close to town, and there was easy access to the market there.

From 2013 the household also had a business charging batteries with a solar panel. "For five years, I have charged batteries for people in the village. When solar started to be used in 2012 I bought a solar panel (300 W) in town just for home use. But I realized it could be a business when my neighbors came over and asked me to charge their batteries. Then, I invested 12 lakhs and bought the biggest solar panel I could find. To start with I made more than K10,000 each day. After two years, other people began to copy me but I was not worried about the competition because I had already got back my investment. Now, I get about K3,000 a day, which is fine for extra income for use around the home. I am always thinking about what kind of business can be done in the village and always have new ideas before the others."

At the time of SIM 5 research the household's main businesses are the grocery shop and betel plantation. The grocery shop's sales have gone up thanks to its proximity to both the high school and Bogale market—villagers from other villages often come to his shop. U Mg Mg is able to save K10,000 per day from these two livelihoods. He remembers that after Nargis he had to restart his businesses by pawning gold; he is saving again (in gold) in order to improve his ability to recover if faced with another disaster. With the savings, he was able to rebuild his home in 2014 so it has wooden walls, a brick floor, and a tin roof; he now intends to build a new house in brick.

Commenting on the changes to his life after changing from a large farmer to a small businessman, he said "I do not want to hire labor for my business. Instead, I will save money myself. So, I work only on my small businesses, not a big farm."

(Case Study 3), reflecting the increased level of connectedness villages have with their township centers and beyond. New or improved roads and jetties have allowed more rapid travel to the markets at the township level, while the now ubiquitous presence of mobile 3G allows communities to connect, economically and socially, to employers, buyers, friends, and relations well beyond the village.

By SIM 5, well-connected villages experienced an expansion of service-based businesses. They included motorbike taxi and goods-carrying services that are now ubiquitous in road-connected villages while some villages even have mobile phone stores. Other enterprises seen more often include grocery shops of various sizes, repair shops for motorbikes and agricultural machinery (reflecting the increase

in mechanization), pharmacies in villages closer to towns, local tailors and embroidery shops, tuition services, and the first 'beer stations.' Other new nonfarm opportunities mentioned in at least a small number of villages included money transfer shops, beauty salons, housing material shops and, in villages closer to township centers, restaurants.

The new opportunities are attractive because they offer higher wages and/or allow the laborer to be self-employed rather than dependent on a local employer. There is little difference between highly, moderately, and lightly affected villages when it comes to new employment opportunities. Even more remote villages have improved employment opportunities though they are more limited.

Women and income diversification

Women, within both male- and female-headed households, have made particularly important contributions to a household's ability to diversify incomes via nonagricultural jobs (Case Study 4). Alongside their contributions to a household's main income, be it fishing or farming, women are also often responsible for the day-to-day management of a secondary income source—whether a small grocery shop, a snack shop selling mohinga or, in larger villages, a more fully stocked grocery store. Other activities identified by the SIM team as contributing to income diversification and mainly organized by women included livestock raising, clothes making/tailoring, supplementary agricultural labor, and working as local fish collectors/brokers.

Migration

Migration across Myanmar has expanded rapidly in recent years, but the growth has been especially pronounced in the Delta. The region's close proximity to Yangon and the rapidly growing construction and garment sectors there have proven massive draws for villagers across the SIM panel. A recent study found that workers from the Ayeyarwady region account for 29 percent of garment sector workers in Yangon,¹¹ while a World Bank survey in 2015 found that 20 percent of Delta households had at least one household

TABLE 13: Outmigration by Degree of Affectedness

Affectedness	High Levels	Medium Levels	Low Levels	Total
Highly affected	4	5	3	12
Moderately affected	7	7	4	18
Lightly affected	5	3	2	10
Total	16	15	9	40

member who had migrated (18 percent domestically, 2 percent internationally).¹²

Of SIM's 40 villages, 16 were assessed as having high levels of migration (at least 25 percent of households having at least one migrant member) with an additional 15 with moderate levels of migration (at least 10 percent of households with a migrant) (Table 13). Put another way, almost 80 percent of villages have experienced substantial outmigration.

The effects of this phenomenon have been clear across this chapter (and are seen in later chapters examining changes to social relations, leadership, and resilience). Farmers struggle to hire labor that has left for better opportunities in the towns and Yangon and even migrate seasonally themselves. Fishers discontented with reduced catches and uncertain

CASE STUDY 4: Sisters Work Hard Together

Daw Mya Aye and her sister live in a village in Pyapon township and own a tailoring business, mostly sewing bags.

They moved to Yangon in 2007 and started to work in a weaving factory where they were paid just K30,000 for the first month. In the second month, because they were more experienced, they were paid K50,000, but decided to move to a new factory where they were paid K100,000. While the pay in the new factory was better, by 2008 they decided to start their own business: they felt that they would never be able to be independent if they continued working in the factory. Therefore, they resigned and opened their own tailoring shop, accepting orders through their personal network from the bag shops in downtown Yangon's Thein Gyi clothing market. In 2011, they took what they had learnt in Yangon and opened a business in their village.

Since their return, they have continued to make bags, selling not only to their Yangon contacts but also to shops in Pyapon and Myin Ka Kone towns. The shops send them a sample bag and then they make copies of it. They currently have three clients in Yangon, two in Myin Ka Kone, and one in Pyapon with orders for approximately 500 bags per week. They make K14,000 of profit for every 100 bags they produce.

Daw Mya Aye and her sister would like to hire more local women to work for them and expand the business, but they have been unable to do so because most of the young women in their village have migrated to Yangon. As a result, they have continued to rely on the labor their family can provide, and are unable to expand their business.

¹¹ Enlightened Myanmar Research Foundation and Andaman Research & Advisory. 2017. *A Baseline Survey of Yangon's Garment Sector Workforce*.

¹² World Bank and Livelihoods and Food Security Trust Fund. 2016. *A Country on the Move*.

returns migrate seasonally, or in some villages have taken their whole household and left the village behind. But it is for laborers that the migration boom has been most transformational, providing important new opportunities for income diversification and advancement, particularly for households with more than one adult able to work.

Unlike in other parts of Myanmar where migrants tend to skew male, the number of migrants out of SIM villages are slightly more female. While women do still face social norms against migration, such as the expectation that they look after children, parents, or other family members, a higher proportion of Delta women have overcome these and migrated. Most go to Yangon where jobs in the economic capital's burgeoning industrial base are easy to come by and offer permanent positions—compared to the construction sector, a major employer of male migrants—that offers only day-based positions. The garment sector, as in other Southeast Asian countries, is a particular draw for migrating young women.

“Before Nargis, only men were responsible for their household. Now it is the women who migrate to Yangon and work at the factories to look after their families.”

—Landless laborer

Migrating women are a key source of remittances back to the villages—over 60 percent of garment workers send back money, often every month—and this income has allowed many families to improve their quality of life, finance education, build new homes, and invest in new or additional livelihoods.¹³ Indeed, as Chapter 7 shows, remittances are a central contributor to a household's resilience. For women who return to the village, they often bring back both hard skills and a new outlook on life enabling them to identify needs in the village and set up businesses to address those needs.

¹³ Enlightened Myanmar Research Foundation and Andaman Research & Advisory. 2017. Op. cit.



3

Credit, Debt, and Land

In 2013, SIM 4 research found that the debt burden in most villages had increased. Of the panel’s 30 highly and moderately affected villages, just three moderately affected villages did not have repayment problems. Small farmers were found to be the most affected by increased indebtedness, followed by laborers who frequently had to borrow for consumption and, therefore, were greatly affected by increases in prices for food and other necessities.

Five years later, debt levels have continued to grow, and indebtedness continues to be a challenge identified by households across the Delta region (Table 14).¹⁴ However, fewer villages, especially those moderately affected, are in debt traps and, among lightly and moderately affected villages, there is a clear increase in the number of households who are able to regularly settle their outstanding loans.

The increased debt levels instead reflect increased credit availability across the panel. While in SIM 3, credit was

provided by the Myanmar Agricultural Development Bank (accessible only to farmers) and various private sources, there is now a wide variety of credit offerings ranging from government programs, microfinance enterprises, NGO schemes, and private lenders. There is little difference in credit access between highly and moderately affected villages, with lightly affected villages having on average about one additional credit source (Figure 2). The expansion of credit sources is explored in more detail below.

Credit and Debt

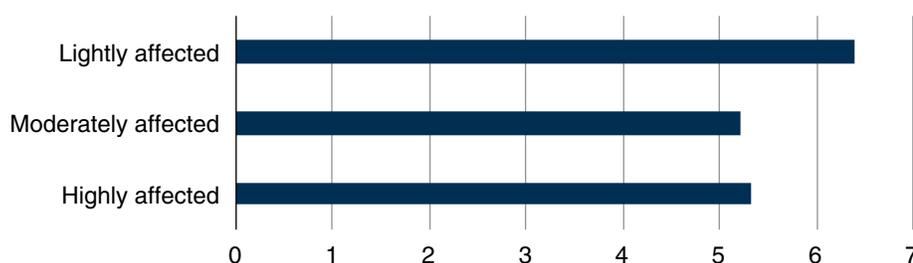
Credit and debt cycles have been a constant in the Ayeyarwady River Delta since well before Cyclone Nargis. The main borrowers have traditionally been farmers, especially small and medium farmers who require loans in order to finance seeds, labor, and other inputs for their paddy rice crop. Until

TABLE 14: Indebtedness by Degree of Affectedness

Affectedness	Villages Able to Settle Their Loans Regularly		Villages Unable to Repay Loans Regularly		Villages in a Debt Trap	
	SIM 4	SIM 5	SIM 4	SIM 5	SIM 4	SIM 5
Highly affected	0	4	6	4	6	4
Moderately affected	3	5	7	9	8	4
Lightly affected	5	8	5	2	0	0
Total	8	17	18	15	14	8

¹⁴ “Settle their loans regularly” means borrowers able to repay both interest and principal; “unable to repay” means able to repay

interest, but not the principal; “in a debt trap” means unable to maintain interest payments.

FIGURE 2: Average Credit Sources per Village by Degree of Affectedness

recent years, these farmers borrowed from one government source, the Myanmar Agricultural Development Bank, and a range of local private money lenders (including village or townships traders, fertilizer shops, and larger farmers).

For other livelihood groups, while credit was both needed and desired, it was much less available prior to Nargis and in the years that followed. Landless casual laborers relied on credit in the leaner months, borrowing for consumption and accruing debt they hoped to be able to pay off through agricultural wages during seasons of high demand for labor. As there were no government sources of credit for the landless, they would rely on larger farmers or professional money lenders, who charged very high interest rates (as much as 50 percent per month).

The SIM 4 research reflected these findings, as well as the high demand for additional credit sources by all livelihood groups. MADB's expansion and the expanding presence of microfinance since 2013 received a positive response from villagers, though fishers reported that they continued to have less access to finance than other groups. Since then, there have been dramatic changes to credit availability in the Delta.

Credit sources in 2017

As in SIM 4, Delta villages continue to rely on a variety of credit sources, but their choice has increased significantly (Table 15). New programs from government, such as the Evergreen Village Development Program and the Cooperative Department's loan scheme, now offer more affordable borrowing opportunities to nonlandowners than was available previously. Microfinance activities, by both NGOs and private sector entities, have also increased.

Myanmar Agricultural Development Bank and other government credit expand

As in SIM 4, MADB remains the most common and the most important credit source for farmers across the panel villages. In 2013, it provided farmers with K50,000 of cheap credit per acre of registered paddy land (up to a maximum of 10 acres). As this was not enough to pay for all inputs, the government has worked to increase MADB loan size over time. For example, the loan size for the 2017 harvest was K150,000 per acre for both the monsoon and summer crops. MADB continues to practice a group-lending approach where loans are distributed to groups of farmers (it used to be ten, but can now be as few as three) rather than to individuals. However, farmers regularly complain that disbursement comes late.

TABLE 15: Sources of Credit by Livelihood Group

	Small Farmers	Medium Farmers	Large Farmers	Small Fishers	Large Fishers	Casual Laborers
MADB	39	40	40	0	0	0
Cooperative	31	30	28	9	8	16
Evergreen	11	11	11	7	6	11
PACT microfinance	24	23	21	14	13	27
NGO microfinance	20	18	18	9	9	18
Private moneylender	31	32	28	23	22	35
Other private source	29	30	28	9	8	22
Village fund	6	6	6	3	2	8

Note: Number of villages where livelihood groups have borrowed from a given source.

The importance of MADB has led to a variety of coping strategies when harvests fail and farmers want to ensure they remain eligible for future loans. In some cases, village tract administrators have set up schemes that provide farmers with a way to remain current, but at a cost: the Village Tract Administrator (VTA) (or a wealthy businessman using the VTA as a middleman) provides a lump sum to the farmers to repay MADB; shortly thereafter, farmers re-borrow from MADB and pay back the VTA, plus a 5–6 percent service fee. This keeps the farmers current with MADB for another six months.

In other villages, farmers have realized that MADB's enforcement is piecemeal or completely absent and simply failed to repay their loans. Farmers who had taken this approach often had one member of their group who was unable to pay. Recognizing that any consequence for nonpayment would affect the whole group, as a group they simply skipped repayment. At the time of research, they had faced no sanction from MADB. In three villages, a different manipulation of the MADB system took place. With the help of their village tract administrator, farmers created fake Land Use Certificates to ensure they could access loans.

The Cooperative Department's loan scheme offers varying amounts to all livelihood groups, and has become more popular among villagers, though some still object to its forced savings mechanisms. The Evergreen Village Development Program, which is financed by a loan from the Chinese government, started in 2015 and was already active across the country in about 4,500 villages by 2016; it has a presence in 14 SIM villages (which is proportionally high for a 40-village sample). The Evergreen program provides a cash grant of K30 million to the village level. These grants are then disbursed as individual or group loans by a locally created committee, according to terms and interest rates set by that same committee with guidance from the Department of Rural Development. The grant is treated as a revolving fund, with interest collected intended to be used for village development activities. The low interest rates and locally determined payment terms have made the project popular among villagers in the SIM panel, with many interviewees commenting on how easy Evergreen loans are to repay.

Microfinance

PACT Global Microfinance is the most common microfinance program. It has had a presence in the Delta since well before Nargis, but has continually worked to expand its programming and is now active in 32 of the panel villages. Other microfinance programs, including those funded by the United Nations Development Programme and the multi-donor Livelihoods and Food Security Trust Fund also have a presence across several townships. Their presence, combined with the Evergreen program, has greatly improved access to credit for landless households, though interviewees cited a number of challenges accompanying

microfinance that have limited borrowers' ability to improve their livelihoods and living standards.

Many interviewees cited the inflexibility of microfinance credit as a major issue; villagers frequently criticized the requirement that borrowers make repayments every two weeks. For most villagers, income streams are not steady over time, making such regular repayment schedules impossible and leading many to borrow from private sources at much higher interest rates in order to make these interim payments. Instead of providing affordable finance to help people escape the debt trap, these loans are worsening the debit situation of the Delta's most vulnerable households and have led some individuals and households to flee their village in order to escape debt. These debts are having further effects on the social relations of the communities, examined in more detail in the following chapter.

Microfinance was also criticized by villages for not offering enough credit to substantially alter a household's economic trajectory. Now that food insecurity is much less common and even the poorest laborers rarely need to borrow for consumption, the focus for most borrowers is on improving their livelihoods. However, while several hundred thousand *kyat*, the most offered by many of the microfinance services, can finance extra fertilizer for a farmer or a new motorcycle for a taxi service, loans of this size do not allow for livelihood transformation. For example, they would not be nearly enough to allow a landless laborer to invest in land and become a farmer nor enough for a farmer to invest in new agricultural machinery. In some ways, much of the Delta's population has moved beyond the micro-finance programs designed for their needs five years ago and are increasingly in need of credit opportunities that allow for longer term, larger scale investments in economic activities.

Private moneylenders

Private sources of credit remain common throughout SIM villages where they range from semiformal lenders to more informal arrangements, such as large farmers who lend to their smaller farmer neighbors or local input suppliers providing seeds or fertilizer on loan. While almost all villages have some sort of private lending source, evidence from interviews suggested that the increasing number of credit sources (both government and donor-driven) has reduced reliance on private sources. SIM 4 identified the early stages of this trend, noting the increasing use of MADB, and with the expansion of low(er) interest credit sources it has continued.

However, it should be noted that relative to farmers and now to casual laborers as well, fishers continue to have much less access to non-private sources of credit.

Variance in terms and conditions

This expansion of credit access since earlier rounds of SIM, thanks to a mix of national and international NGOs, and

government programs, has offered villagers the opportunity to begin comparing different credit sources and make decisions on which source best suits their needs. Villagers in SIM 5 were more aware of credit terms, of interest rates and models for calculating them, and of social security fund incentives for various credit sources.

Gender and credit access

With the exception of MADB, where loans are disbursed only to the person registered on the Land Use Certificate (LUC),¹⁵ women do not face any regulatory barriers to credit access compared to men. All individuals can access Cooperative Loans and Evergreen program finance (reflective of the rules set up by the local committee) while PACT and other microfinance and revolving fund programs actively enable women to borrow independently of their husbands by setting up women's groups for this purpose.

Nonetheless, social norms and pressures do factor into women's ability to access credit. In some cases, loans are disbursed by household, which may limit a woman's access relative to her husband. In other cases, training programs that accompany loans, such as for agricultural or livestock rearing techniques, do not fit well with women's other responsibilities within the household. Women are instead more likely to engage with other types of credit adjacent

programs, such as bookkeeping training or learning to set up small tailoring shops with support from a village revolving fund. In sum, while there are few formal barriers for women to access credit (and in many households women are responsible for day-to-day household finances), social norms regarding activities suitable for women and household responsibilities do limit how women borrow.

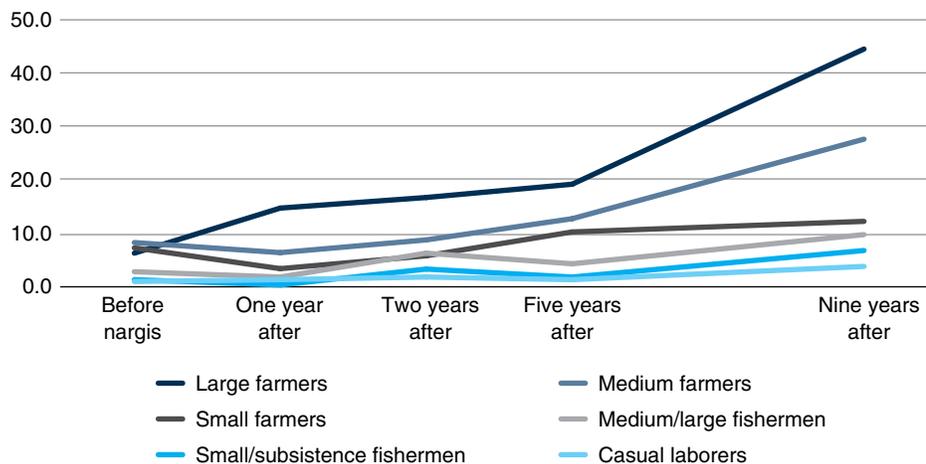
Levels of debt

Previous SIM research found many households carried significant levels of interest-bearing debt from a variety of government-subsidized and private sources. Over the past five years, debt levels have continued to rise, though these increases have been unevenly distributed among livelihood groups.

Farmers

Large and medium farmers have experienced the largest debt increases, a reflection of the challenges facing them from weather shocks, variable harvests, and their reliance on increasingly expensive labor. As Figure 3 shows, debt levels among these groups have gone up particularly fast. Small farmers have been the least affected by debt increases of any livelihood group, showing only a marginal increase over the previous four years. Their ability to avoid debt increases is due to both their limited need for finance (restricted to

FIGURE 3: Average Debt Levels over Time (in lakh)



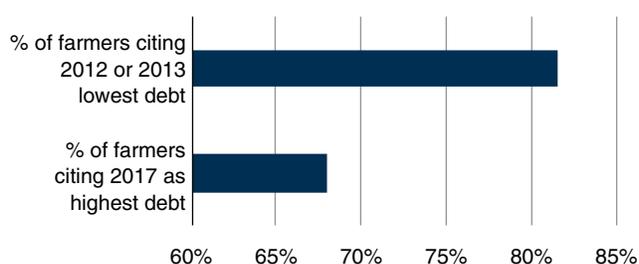
¹⁵ The registered individual receiving the loan is generally the head of the household. However, as MADB only allows loans for ten acres of land per person, larger farmers often register their land in the names of other family members, including their wife and

daughters as necessary, to ensure they receive as large an MADB loan as possible. In these cases, women do technically receive MADB loans, but usage of that loan would be determined by the household head.

inputs) and their inability to take on much debt: once a small farmer's debt grows too high, he would likely need to sell (part of) the land.

Asked when over the past five years they had the highest and lowest levels of debt, in over two-thirds of SIM villages, farmers said they had the most debt in 2017; over 80 percent reported lowest debt levels in 2012 or 2013. This suggests that debt levels have gotten progressively worse, with a growing number of farmers, especially medium farmers who need to borrow but have the least ability to service debt, unable to escape from a debt trap (Figure 4).

FIGURE 4: Highest Debt Year for Farmers



Among farmers, there are many who have struggled to remain eligible for government loans while others have consciously defaulted. Despite the high levels of debt facing Delta households, however, many continue to borrow, with farmers in particular saying they have little choice. Without borrowing each planting season, many farmers have no ability to buy agricultural inputs.

Fishers

Fishers reported a similar increase in debt, though starting from a lower level. For small or subsistence fishers, average debt levels in 2017 were three times those of 2013. While there are fewer large fishers making it difficult to identify the drivers of their increased debt load, for small fishers the expanded costs of equipment and licenses were cited. Further, fishers tend to have the most limited access to credit.

Credit needs for fishing livelihoods differ structurally from farming; instead of annual inputs, fishing requires a capital

input that is then used for several years. For example, after Nargis when many boats were destroyed, the biggest challenge for fishers was being able to afford to replace their boats, engines (for those who had them), and nets. Today, the fishing context requires a boat with an engine—a large expense that most village-level credit sources (including microfinance providers) are ill-equipped to address. As a result, debt among fishing households reflects large debts taken on for livelihood investment, often from township-level businesses or fish brokers.

Casual laborers

Casual laborers' debt levels are also up substantially, though this likely reflects the greater access to credit available to them in 2017 as much as needing to borrow for consumption. Since 2013 the number of village-level credit programs accessible to landless households has grown significantly with both government (Cooperative Department, Evergreen Loan program) and microfinance providers now offering loans.

These credit programs have increasingly focused on providing landless households with alternative or diversified income sources in an effort to reduce reliance on agricultural labor. From group loan programs supporting animal husbandry to individual loans that have enabled households to start family businesses, debt levels of landless households have risen alongside local economic opportunities.

Debt and the degree of cyclone

For certain livelihood groups, Nargis' effects continue to reflect increased debt burdens. This is particularly clear for large farmers: large farmers from highly affected villages tended to have significantly more debt than similarly sized farmers in lightly affected villages. The same correlation existed, but is much weaker, for small and medium farmers as well as small fishers. However, there is little correlation between debt load and affectedness for casual laborers, likely reflecting both the improved livelihood situation for laborers discussed in the previous chapter and the relatively lower debt held overall by non-fishing, landless households. Table 16 highlights this distribution of (self-reported) debt.

TABLE 16: Indicative Debt Levels by Degree of Affectedness across Various Livelihood Groups (in lakh)

Affectedness	Large Farmers	Medium Farmers	Small Farmers	Small/Subsistence Fishers	Laborers
Highly affected	5.28	2.93	1.46	0.74	0.35
Moderately affected	4.72	2.66	1.02	0.66	0.46
Lightly affected	3.20	2.72	1.34	0.55	0.34

How households deal with debt traps

Households stuck in debt traps generally first respond by the sale of assets—in the case of farmers this means pawning land or selling it and in the case of fishers, selling their boat. Many farmers, rather than sell their land outright, attempt to pawn it so as not to lose the rights to it completely and even have one final attempt at a successful harvest. However, in cases where they are unable to redeem it, this results in further debt and an inability to benefit from its sale.

Once a household's major assets have been sold, migration of at least one working-age adult is an extremely common response. Either in the town or, more frequently in recent years, Yangon, it is possible for most able-bodied adults to find work that allows them to live and send small amounts of money back to their family. While these remittances can provide enough for survival, the experiences of many debt-ridden villagers suggest they still often struggle to pay the interest on their loans, let alone the principal.

In the most extreme case, villagers leave their homes and run away to escape debts. Mostly the head of household (who holds the debts) will leave, but the SIM 5 research found numerous examples where whole families would run to other parts of the Delta or to Yangon in an effort to flee from their creditors. There were 15 villages where this was reported as having happened at least once.

Land

The SIM 4 research found that economic strains were leading to more land transactions, resulting in increasing land inequality where significant amounts of farmland were held by a small number of individuals. A quarter of SIM villages had experienced a high number of land transactions between 2010 and 2013, including half of the highly affected villages, with further consolidation on the horizon: many farmers told researchers they planned to sell their land once it had been registered under the 2012 Farmland law.

However, SIM 5 research indicates that the consolidation of land has slowed and that for small and medium farmers land sales continues to be a last resort. Even when facing significant debt burdens, these farmers continue to seek innovative ways to retain their land and plant it, knowing that one or two good harvests can allow them to escape the debt trap, while the market value of the land will do little but furnish consumption costs for a year or more. Further, land disputes, which were a major theme and potential risk

highlighted in SIM 4, were found to have declined in both number and severity.¹⁶

Land Sales

Sellers

SIM 5 research found that with the exception of a handful of villages, there were just one or two land sales per year. Of those who were selling their land, most tended to be small or medium farmers whose debt burden had reached a point where they could no longer avoid land sales. In some villages, larger farmers were also active land sellers, generally driven by two factors. First, given the challenges of finding labor, increasing input costs, and highly variable returns, the advantages of having large amounts of land (especially if that land is far from the village or in a bad location) are less attractive. Second, MADB limits credit disbursement to 10 acres per farmer, and while in the years immediately following registration large farmers could get around this by registering land under multiple family members' names, MADB has begun cracking down on this practice and therefore making it much more expensive to borrow for input on anything over 10 acres. As a result, larger farmers either sought to rent out or frequently sell land they viewed as extra to their needs, especially given the more diverse investment opportunities that now exist in many SIM villages or the opportunity to buy land or houses in town.

Buyers

Land buyers tended to come from within the village itself, and many were moneylenders, highlighting the challenge of debt facing small and medium farmers. The land owned by moneylenders is then frequently rented out to landless households (sometimes even the previous owners) for them to farm. Other types of local buyers included those who had received remittances and sought to invest in land (including fishers working to diversify) and new couples who wanted a housing plot of their own. Several instances of buyers from outside the community were reported, including

¹⁶ Discussions with the research team and analysis of the data suggest that while the registration process may have caused some tensions, for villages where all farmers have Land Use Certificates and the issue of who owns what land has been largely settled, LUCs serve to reduce uncertainty over ownership and have reduced intra-village disputes over land. Nonetheless, it is worth noting that LUCs have not solved long-standing disputes over land, particularly where land has been seized by parties outside the village, especially government or government-linked companies. Such instances, however, are uncommon across the SIM panel.

businessmen from the township who bought up land along the side of the main road leading through the village. Such outside activity in village land transactions was reported in four villages.

Prices

Land prices vary significantly from village to village, though in general there has been an increase in land prices over time. The lowest reported price was K300,000 per acre for paddy land located outside a protective embankment. Most of the interview respondents who had sold land reported sales prices of between K600,000 and K900,000 per acre, with much of the variance depending on the location (land near roadways and access routes was notably more valuable) and when the land was sold. The highest reported land prices were between K1,500,000 and K1,800,000 per acre, though in one part of Dedaye township prices were reported at K6,000,000. The more highly valued land was either along the main roads purchased by businessmen from outside the village, or was high quality paddy land (i.e., at a higher elevation) bought by larger farmers from indebted smaller farmers.

“Money Return–Land Return” and the importance of land pawning

Borrowing against the value of land has a long history in the Delta. Table 17 indicates that this happens commonly or occasionally in just over half of the sample villages. Previously, these transactions were undertaken in a very informal manner. Since land registration occurred, however, they have gained an extra level of formality. There are three ways in which land is used as collateral for loans.

First, there is the use of the Land Use Certificate as collateral for loans from private sources. Interest rates for such loans are generally 5–6 percent per month, somewhat less

than the 7–10 percent charged for collateral-less loans. This borrowing model is the newest of the three as it is reliant on farmers having an LUC, something which was only introduced following the 2012 Farmland Law and only widely held in SIM villages in the past few years.

Second, there is the more traditional land pawning, where instead of the LUC, the land itself is the collateral. For both this and the LUC-based loans, the farmer is still able to work his farmland, while also able to access finance, which is used to pay for inputs, other farming costs and, sometimes, their own consumption in advance of the harvest.

Finally, there is the ‘money return–land return’ system, whereby land used as collateral is used by the lender. Under this system, a farmer gives over usage rights to a plot of land for a fixed term, generally for three years, for a fixed sum, often approximately 50 percent of the land’s value, with no interest accompanying the agreement. For the three-year period, the land is ‘owned’ by the lender who can farm it himself or rent it to a tenant farmer. After three years, the farmer either repays the debt and recovers his land or develops a new agreement, either extending the ‘money-return, land-return’ period, or by agreeing to sell the land completely, in which case the farmer receives an additional sum.

For both land pawning and ‘money return–land return’ systems, the amount of cash the farmer can expect to receive is significantly less than the market value—generally between one-half and one-third of the mutually accepted market value of the land. However, the flexible nature of the loan and informal nature of the process make it appealing. Repayment periods for these borrowing models are generally up to three years but can be as much as five, while the informal process, generally between neighbors with local witnesses and social pressure as enforcement, limits the need to deal extensively with beyond-village authorities. The lenders for all three types of land loans tend to be larger farmers within the village, relatives, or farmers from neighboring villages.

TABLE 17: Frequency of Borrowing against Land by Degree of Affectedness

Affectedness	Common	Occasional	Never	Total	Share of Never
Highly affected	2	7	3	12	25%
Moderately affected	0	8	10	18	56%
Lightly affected	0	4	6	10	60%
Total	2	19	19	40	48%



4 Social Relations

Early rounds of SIM examined the social strength of villages in the Delta following Nargis and, in later rounds, the evolving effects of assistance and aid delivery on social bonds. Tensions over distribution persisted into SIM 4, albeit at lower levels as by 2013, social challenges were more directly linked to economic ones. Nonetheless, SIM 4 found that overall, social relations remained strong. By SIM 5 the direct effects of Nargis-related issues, including post-disaster aid disbursement, have largely dispersed (Table 18).¹⁷

Instead, with a small number of exceptions, the forces affecting social dynamics in SIM villages are reflective of broader trends found across Myanmar that are, in some cases, exacerbated by Nargis’ legacy. These forces include migration, economic change, an increasingly connected society and, in

some areas, challenging intercommunal relations (Table 19). Despite these issues, some of which are found in almost all villages, social cohesion remains strong.

Inter-Household Relations

The importance of extended family

The presence of family nearby has proven to be an increasingly important indicator of a household’s ability to restart a business or generate new sources of income following a shock. The extent to which the extended family helps one another has not changed and remains an important

TABLE 18: Village-Level Social Relations between 2013 and 2017, by Degree of Affectedness

Affectedness	2013			2017		
	Good	Fair	Poor	Good	Fair	Poor
Highly affected	3	5	4	2	9	1
Moderately affected	8	7	3	2	11	5
Lightly affected	5	3	2	6	2	2
Total	16	15	9	10	22	8

¹⁷ Villages with “good” social relations tended to have high levels of unity/homogeneity and a high level of collective action and trust in village leadership; those with “fair” social relations tended to have less unity (e.g., with some groups not participating in village affairs), some disagreement within the village on village

development activities, and clear divides between supporters and detractors of the current leadership; “poor” social relations occurred in villages with multiple religious groups, where villagers felt discriminated against by village or township authorities, and where there was little unity or collective action.

contributor to recovery. This assistance often takes the form of renting farmland, lending farming tools, giving loans, and offering space to live or raise livestock (most commonly ducks) (Case Study 5).

TABLE 19: Village-Level Changes in Social Relations since 2013, by Degree of Affectedness

Affectedness	Improved	Worsened	Stayed the Same
Highly affected	3	4	5
Moderately affected	2	9	7
Lightly affected	5	3	2
Total	10	16	14

Reliance on neighbors starting to shift

Households across the Delta rely on each other for assistance on specific needs; households mostly continue to help each other where they can. For example, since well before Nargis, farming households would ask for labor sharing help from other farmers when ploughing or planting their fields. This has continued into SIM 5. For social requests, the types of needs have changed over time. In 2017, some of the most frequent requests were to borrow a motorcycle as transport to visit a health clinic or borrow an identity card (as national identity cards are far from ubiquitous in Nargis-affected villages) which is needed when trying to register with employers in Yangon or elsewhere. Requests for volunteer assistance when constructing and repairing homes were also common.

However, in SIM 5 some interviewees reported that the willingness of friends and neighbors to respond to requests has begun to change. They generally attributed it to communities becoming more ‘business-minded’ and individualistic while at the same time improved job availability and better wages meant people have less free time to help one another.

Relations within Village Groupings

Village life across the SIM panel is increasingly ordered along activity and identity grounds that reflect the actual make-up of the village, marking a step away from the required, but often formulaic, ordered institutions under the previous military government that required every village to have cookiecutter organizations such as the fire brigade or maternal and child health group.

Activity-based groups

As the required groups disappeared, there has been an accompanying increase in the number of local charity-type organizations formed at the village level. These take various shapes, but particularly common are free funeral service organizations, likely a reflection of the popularity and support for the national free funeral service charity that has become well known across Myanmar. Twelve SIM villages reported having this kind of local group active in their community. Three villages also reported the emergence of independently created microfinance groups, modeled on a local microfinance program but initiated and run completely by members of a given village.

CASE STUDY 5: Family Connections Help a Household Improve Their Lives

A 34-year old woman owns a grocery shop and her husband is a village administrator. Right after getting married, the couple moved to another village where her husband lived. They farmed as tenant farmers on four acres rented from her mother-in-law, and in 2006 also started raising 200 ducks. Nargis destroyed their farming equipment, but they were able to borrow a plough from her brother-in-law and started tenanting again.

In 2009, her elder brother asked her and her husband to tenant his 8-acre farm, so she and her husband moved to yet another village where the farm was. They continued to raise ducks; 300 this time. By 2010, her parents-in-law had asked them to return to their original village, so they sold the ducks and returned to tenant their farm.

She and her husband wanted to open a grocery shop, as his brother ran one and it was a good business. They heard that there was no grocery shop in a village located in the same tract and moved there in 2013. Several months later they borrowed K700,000 at 5 percent interest per month from the brother-in-law from whom they had gotten the idea and set up their shop. They did well and were able to repay the debt after just one year.

The increase in government or government-linked/donor-funded programs has also driven an expansion of local institutions. Both the Evergreen program and the World Bank-funded National Community Driven Development Program (active in seven villages across Kungyangon and Ngapudaw townships) mandate village-level coordination groups. These new institutions were also credited by villagers as helping give rise to the potential for increased female leadership locally as they require the inclusion of women in their committee structures.

As highlighted in the discussion on livelihoods, agricultural labor groups are more common than ever before and in two villages nonagriculture labor groups have also started up. The laborers reported they like to work with the group as there are many advantages, including increased productivity, expanded number of working days, and more job opportunities. In addition, working groups provide social benefits from working with the same people every day, and friendships and cooperation is built through that collaboration.

Identity groups

Youth groups' declining role in village affairs

Youth participation in all forms of village activities is down, primarily due to migration. Just five villages now have active youth groups, which has had a particular effect on village socioreligious events. Prior to the migration boom, such events were often organized by youth groups; now, only a handful of youth are available to participate.

Villagers across the SIM panel report that there is only strong youth participation for ceremonies at Thingyan (New Year) in April and Thadingyut (end of Buddhist Lent) in October, the two holidays when migrant workers often return to their home villages. As a result, some villages have reduced the number of other socioreligious events that they hold in an effort to maintain participation levels among those villagers who remain. Again, communities reported that enthusiasm for such events remains, but the ability for a village to hold them and for villagers to participate is more limited. Youth groups, where they exist, have become somewhat more accepting of women in leadership positions.

Changing norms for female involvement social relations

Women are more involved in local organizational activities thanks to NGOs and development activities that have mandated a gender balance in committees and other aid-linked development projects. Women are encouraged to participate and have an opportunity to receive training, including skills like accounting as well as vocational training. The credit programs by international donors also have contributed to creating additional livelihood/income sources, and have given

women opportunities to create some independence within the household.

The expansion of mobile connectivity and 3G services that now exist in all SIM villages have also begun to gradually shift gender norms. All villagers have increased access to media, including social media, that shows women in different contexts, such as social and economic leaders. Awareness of gender issues has also increased, especially among SIM's female respondents who reported they had more information on issues such as violence against women¹⁸ and concerns over human trafficking. They also reported that the increased exposure through media of women taking on different roles in life had made it harder for traditional local male leaders to dictate how women should and should not act regarding village social affairs.

The broader political transition has made a significant contribution toward women leadership as well. Aung San Suu Kyi is seen as an inspiration and as making it acceptable for women to be leaders in the eyes of both men and women (Case Study 6). This is discussed in detail in the following chapter on village leadership.

Beyond political engagement, migration is having a broader impact on female economic empowerment. There is more female migration than male migration thanks to the development of the garment industry in Yangon. Women who have migrated are more able to identify economic opportunities in the village when they return, and have sought to take advantage of village needs. The villagers reported women have more ability to save money as they do not (have the chance to) participate in social, entertainment, gambling, or drinking. In addition, returned female migrants have larger roles in social affairs of the village.

Relations across the Village

Villages continue to cooperate and work together at similar levels and for similar goals, both before Nargis and in previous rounds of SIM research. However, social interaction and village cooperation have changed, reflecting the broader trends identified above.

Contributions to village activities ranging from socioeconomic development works to socioreligious activities have evolved away from labor contributions by individual households. Prior to 2013, villagers would regularly be asked to contribute labor alongside a small amount of money for village activities—particularly those linked to village

¹⁸ As ever, instances of domestic abuse and sexual violence are almost certainly underreported in this study.

CASE STUDY 6: A Female Villager Becomes an Evergreen Chairwoman

A village in Kyaiklat township is led by a 100 household head. One of the villagers, a wealthy lady and a strong supporter of the National League for Democracy (NLD) has taken an active role in improving the welfare of the village. She also has connections with the local NLD party leadership—she was named village tract NLD chair after the general election—and contested the 2015 VTA election as a 10 household head, though she was defeated.

In 2016, the village was approved to become part of the Evergreen program. The new VTA wanted loans from the scheme to be accessible to all villages in the tract. However, the influential lady said that her village had been accepted into the program thanks to her proposal at an NLD party meeting and that it was only for one village according to the program's policy. The VTA responded that the approval had been granted due to his administration's work and his village should also benefit. This difference of opinion led to tension between the two.

A meeting was held at the woman's house to set up the Evergreen program's local management committee. The NLD Member of Parliament attended, as did district- and township-level officers from the Department for Rural Development (DRD). All of the villagers attended and DRD staff explained that the committee would be responsible for the proper management of the loans.

That same woman was selected chair of the Evergreen committee and ensured that all the other members were people who had a good relationship with her. As the loans began to be disbursed, her village's leader and some other villagers became dissatisfied about how the money was being distributed. The chairwoman allowed households with which she had good relations to borrow between five and fifteen lakhs; others could only borrow two to five lakhs.

The village leader worked with the VTA to submit a complaint to the DRD township office about the chairwoman. At the monthly NLD party meeting the Member of Parliament advised her directly to explain the case to the more senior district-level DRD office. In 2016, DRD eventually ruled that the committee would need to be reconstituted based on an open village election.

The Evergreen chairwoman was interviewed about the program as part of the SIM 5 research. She explained that loan amounts were determined based on the livelihood of the borrower, the level of return that could be expected from their proposed investment, and their track record as a hard worker. She said she had continued to help improve the village after the DRD decision by visiting Naypyitaw with the support of the Member of Parliament and requested support to renovate the village road. Her request was approved and the new road was built. The election for the Evergreen committee had not yet occurred by the time of this research.

development. The cash contributions continue largely as normal, but labor contributions are now much less common. This is because many households either cannot contribute (because those who might volunteer labor have migrated) or they are busy with their own livelihoods. Instead, they pay village laborers to take their place, generally for a wage of between K3,000 and K5,000 per day.

While the tendency to utilize more cash payments versus in-kind labor for village contributions was seen across the SIM panel, the burden of village cash contributions remains a heavy one for the poorest households. Village leaders regularly collect sums of money from villagers for monastery improvements, socioreligious events, or local infrastructure maintenance, and while the amounts are generally based on household incomes, poor households struggle to give what is expected. In some cases, especially vulnerable households, such as women-headed or child-headed households, were released from the requirement to pay, but then

reported feeling isolated and excluded from village affairs and religious ceremonies.

Village self-help activities have also changed, due in part to the declining role of the 100 household head, discussed in the following chapter on leadership. The effect of this decline in village social life stems from leaders' reduced ability to organize the community for collective action. This has been the case especially in villages where local leaders, either 100 household head or VTAs, have found it difficult to adjust to a new political context where they cannot order villagers to take part.

Several villages where there is no VTA (and thus when the organization of collective action for village development is dependent on the 100 household head) reported a declining frequency in activity. This happened despite the need for such efforts remaining undiminished.

Community leaders organize far fewer village meetings than before 2013, a change attributed to a lack of villager interest. Village leaders complained it is now very difficult to organize such a meeting if there was no incentive for villagers to attend—for instance, the promise of outside assistance. As a result, since the most recent election in 2015, mass meetings are normally only called to discuss government service delivery or other outside support, and most meetings reportedly focus on education access, the arrival of MADB loans, or National Community Driven Development and Evergreen Village Development program activities.

Intra-village conflict and conflict resolution

Small-scale conflicts, generally between households, are relatively frequently of minor issues across many SIM villages. Such disagreements often revolve around issues of public nuisance (generally related to alcohol abuse), small-scale debt repayment issues, disagreements over advance payments to agricultural laborers, and conflict between the livelihood groups. The latter includes, for example, fishers' anger over perceived pollution of streams by farmers' fertilizer or if a landless household's duck flock eats a farmer's young paddy plants.

Resolution of such disputes generally occurs at the village level. If the disputants cannot find a solution, the first step is to involve the village leader or village elder and, in most cases, the issue ends there. If either side feels they were unfairly treated, they are able to appeal to the village tract administrator but, given the frequently large distances between villages, this is only done in rare cases or if the issue is particularly important, such as dealing with a large debt dispute. An exception to this model is in the case of villages where the VTA lives or villages that are close to a VTA's home. In these instances, the parties to the dispute may involve the VTA immediately.

Inter-Ethnic and Inter-Religious Social Relations

Buddhist-Muslim relations

Bamar Buddhist and Burmese Muslim minorities coexist in three villages across the SIM panel. Both communities were asked about their relationships with the other religious group and, at least in conversation with outsiders, no major challenges to social harmony were reported. For example, in one village the minority Muslim population expressed their willingness to contribute funds for improvements to the local monastery as it is used as the local shelter. There are

economic relations between the two religious groups with both sides saying they buy from and sell to members of the other religion and do not feel cheated. At the same time, there were no labor sharing and few areas of joint decision making as the two groups largely live separately.

Mixed villages reported that both Muslims and Buddhists would attend each other's major religious festivals and celebrate jointly, though Muslims would not join in celebratory meals during Buddhist festivals. In small day-to-day needs, such as funeral contributions or supervising children walking to school, both communities helped each other. But as they lived in different parts of the village, sharing of farming equipment or the hiring of laborers from the other religion was uncommon. Further, as Bamar Buddhists could more easily move to Yangon, they had higher migration rates, while Muslim farmers took care to provide job security in the village for their co-religionists.

There are other social differences, such as the fact that while both groups in some villages could cooperate on community infrastructure, this was not always the case. And Bamar Buddhists said that in one village the infrastructure in the Muslim portion of the village was much better, a difference perceived as being rooted in stronger religious unity. Most village leaders are Bamar, though at least one 10 household head is Muslim.

However, as shown in Case Study 7, religious minorities have faced difficulties practicing their religion freely or having their own place of worship. While tensions between groups were reported in previous rounds of SIM, in previous years they were generally due to aid distribution. This finding of a more general tension between religious groups reflects a concerning trend of growing localized intolerance toward religious minorities across Myanmar (Case Study 7).

Bamar-Karen relations

Alongside the three Buddhist-Muslim villages, the SIM panel includes several villages with mixed Christian and Buddhist populations. The Karen demographics in SIM villages consist of one village which is entirely Karen Christian, three which are mixed Karen Christian and Bamar Buddhist, one which is Karen Buddhist and Bamar Buddhist, and one where the majority Karen population has both Christian and Buddhist households.

In one of these villages, there are poor relations and a lack of trust between the Karen and the Bamar, stemming from the aftermath of Nargis. The village was badly affected by the cyclone, and in the following years many Bamar migrants moved to the village because of the large amounts of outside assistance the village received. Karen people have perceived these migrants as taking what is not theirs and associate

CASE STUDY 7: Instances of Religious Tension

In a village in Bogale township, there were 15 Muslim households before Nargis. After Nargis, the village faced many difficulties. When external assistance came to the village, it was shared across the whole village. Later, when Muslim households received additional aid from Muslim communities in other parts of the country, they did not share it with other villagers. Moreover, a few years later as violence against Muslims erupted in Rakhine state and elsewhere, there was some Bamar-Muslim violence in the township as well. Consequently, the villagers became cautious in their interaction with households of a different religion. Moreover, Muslims were not allowed to celebrate their Eid al-Adha. The relationship between the two religious groups has thus been damaged. Since then, some of the Muslim households have moved to Bogale town, and there are only seven households left in the village.

In another village, there are several Muslim households. Their primary livelihood is farming and their economic situation is fair. They hire labor only from their Muslim community, which has caused some resentment among Bamar laborers who feel they have fewer job opportunities. The Muslim community is not allowed to celebrate their Eid feast and sometimes when they travel, they were asked what religion they had, and other invasive questions. These issues have created divisions between the two groups and both sides feel insecurity and distrust toward the other.

them with local misbehavior. There is little social interaction between the two groups on any issues and they do not invite the other group to religious or other events.

More broadly, even in the other mixed villages, there is no joint decision making. The Karen are always the majority group; as such, they make most of the decisions and the Bamar villagers are unable to be an influence in the decision-making process. There is also a gap in terms of rich and poor: the Bamar households tend to be poorer, working as fishers, and living further from the center of the village. Even without the ethno-religious differences, their village position would reduce their ability to be involved in community decision making.

The groups tend to celebrate social occasions on their own, and though they might invite people from the other religion, it is not very common for people to attend. Inter-household assistance is generally asked from and provided to only people from the same religious group, though this has been the case historically. There is no sharing of livelihood equipment, mainly because the groups tend to have different primary livelihoods.

Factors Driving Changes to Village Social Relations

Economic standing

Economic standing for many villagers has improved over the last five years, but in doing so it has led to households becoming more individualistic. As their economic standing improves, villagers' ability to contribute more cash for village improvements, religious affairs, and social activities

has expanded. At the same time, their ability and willingness to respond to requests for help has declined. When interviewed, villagers attributed the change to communities becoming more 'business-minded' and 'individualistic' while also recognizing that improved job availability and better wages meant people have less free time to help one another.

Impact of migration

Migration is a contributing factor to the decline in socio-religious occasions celebrated in many villages. Youth participation in village affairs has decreased significantly, with the exception of a small number of occasions when migrant workers return to their homes. Villagers interviewed said "we only realized how many people were leaving when they came back for a day of religious significance." The younger generation no longer wants to work in the fields as youths prefer working conditions in town, but still enjoy returning to the village when they can.

Location

Peri-urban villages have become ever more urbanized in their social practices, such as in organizing weddings, novitiation ceremonies, and other religious affairs. These villages have a variety of activities not seen in more remote villages, such as December sport competitions. However, peri-urban villages are also taking on less positive characteristics of urban spaces, showing less hospitality to outsiders and being less welcoming to guests from beyond the village. For example, during the SIM field work, three out of four research teams were told they could not stay in peri-urban villages overnight. These same villages generally

expressed a reluctance to participate in the research project compared to remote villages, a sentiment that did not come up in previous rounds of SIM.

Affectedness

The humanitarian aid following Nargis resulted in intra-village social tensions in highly affected villages receiving more assistance that took a long time to disperse. At the same time, highly affected villages now report very strong social relations and cohesion, based at least in part on their close brush with death. As a result, highly affected villages today seem to work together for all kinds of development activities more effectively than less affected villages.

Introduction of Social Protection

Government social security funds have been introduced in some villages, though these programs only support the most vulnerable. Traditionally, Delta communities have been on their own when there was need following accidents or other

unexpected events. Villagers came together to raise funds, especially in the case of funerals or hospitalizations. While government support to the neediest has begun to increase, communities continue to serve as the backbone of social protection. There are new examples across the panel villages of associations that are developing social security funds. Funeral funds to lighten the financial burden on a household after a death are perhaps the most common. The member households contribute a fixed amount ranging from K500 to K1,000 monthly depending on their economic standing. Such funds can be found in 13 SIM villages.

The PACT Global Microfinance Fund, active across 32 of the SIM villages, has introduced social protection services since 2013, a first for many Delta communities. PACT provides various forms of social assistance based on an assessment of village needs. The support includes maternal and child health care, funeral expenses, loan write-offs, and financing its members' recovery and reconstruction from shocks and disasters. Other NGOs are providing similar assistance, including Marlin, Save the Children, and the International Organization for Migration, but none are as prevalent or well thought of as PACT.



5 Leadership and Institutions

Over the last five years, local leadership structures in villages across Myanmar have changed. In the years immediately after Nargis, contact with state bodies and other outside organizations did expand notably compared to the pre-Nargis context. But it was after the 2010 election and the installation of the reform-minded government under U Thein Sein in 2011 that changes to leadership within and beyond the village really began to evolve as new government services were delivered and democratic reforms introduced.

These changes were not limited to the Ayeyarwady Delta; a recent report found government assistance projects more than tripled between 2013 and 2015.¹⁹ Alongside service expansion came new legislation, massive improvements in connectivity (particularly technology but also for transportation infrastructure), and both a level of increased assertiveness on the part of villagers and a reduced ability of local leaders to engage in local authoritarianism. All these forces have shaped how leaders are selected, how they are evaluated in the eyes of the communities, and what their local role has become.²⁰

Leadership in the Delta

The most grassroots level of official leadership recognized by the Myanmar government is the Village Tract Administrator who, while not a formal employee of the central bureaucracy, the General Administration Department (GAD), is

linked to it and receives a stipend from it. Above the VTA lies the township administration, primarily a GAD organization but with assigned officers from other line ministries, the number and assignments of whom vary by location. The VTA is administratively responsible for a group of three to ten villages and, from the SIM perspective, the most senior leader included in the research. Below the VTA are the 100 household heads who, while no longer recognized by government, provide important and frequently formally appointed assistance to the VTA, and 10 household heads, who continue to have an official role as the electors of the VTA but few other administrative duties. In larger villages with more than 100 households, one of the 100 household heads is sometimes informally designated as the 'village administrator.'

Legislation in 2012 paved the way for a form of local democracy

Indirect elections via the 10 household heads for the position of VTA were introduced in 2012. Up to early 2011, VTAs were appointed by the township administration department with or without consultation with the community. The very first VTA election was then held in 2012 according to the newly passed Village Tract and Ward Administration Law. Every ten households selected a representative who became the 10 household head. These people, mostly men, gathered to elect the village tract administrator. At the same time, a committee of community elders from across the village tract was created. This body, literally known as the Village Elderly and Respected Persons committee, was tasked with setting up, supervising, and monitoring the VTA election process.

In most village tracts, once the VTA was elected, they would then select candidates to be the 100 household heads in the villages around the tract. While local-level politicking was relatively nascent in 2012, VTAs generally selected people who supported them and who they felt had strong

¹⁹ Enlightened Myanmar Research and World Bank. 2016. *Livelihoods and Social Change in Rural Myanmar*.

²⁰ For a detailed study on leadership, institutions, and change in Myanmar villages, please see World Bank. 2017. *Documenting Myanmar's Social Transformation Insights from Six Rounds of Research on Livelihoods and Social Change in Rural Communities*. Working Paper 8055.

motivations to work for village development. Support of the ruling political party (the Union Solidarity and Development Party at the time) was on occasion also a factor. In some cases where the first selection was objected to by the villagers, the VTA asked the households to select their preferred leader.

Mobile technology's role in changing relations between leaders

Myanmar's mobile telecommunication boom is perhaps one of the country's most significant changes since SIM 4. The results of newfound access to digital connectivity has changed social and economic interactions, and has had a major impact on how local leaders interact with each other. In SIM 4 and all prior SIM reports, the ability of village tract leadership to engage with villages or represent them to the township, was dependent on ease of access to the township center and the dedication of the local leader.

For most local leaders, attending the monthly township meeting was the total of engagement with the township administration—and leaders from more remote communities struggled even to attend these. Now, all 17 VTAs who were interviewed reported that they were in a Viber, a mobile messaging app, social chat group with all other VTAs in the township. This group allows the township administrator to rapidly disseminate information across the township, allows VTAs to provide updates to the township administrator, and allows VTAs to communicate with each other, sharing relevant news. Several village leaders also reported that they used Viber to provide updates from their village to their VTA, reflecting an informal but digital communications structure that now connects individual villages with the township.

Formal Leaders

Nine years after Nargis, 80 percent of villages had positive or neutral perceptions of their leaders in 2017 (Table 20). However, there was a strong shift from positive to neutral. By SIM 4, about half the villages had positive perceptions of their formal leaders. By contrast, four years later only about one-quarter of villages had positive perceptions. This

TABLE 20: Perceptions of Local Formal Leaders by Degree of Affectedness

Affectedness	Positive	Neutral	Negative	n.a	Total
Highly affected	3	6	3	0	12
Moderately affected	6	8	4	0	18
Lightly affected	2	5	1	2	10
Total	11	19	8	2	40

development reflects broader changes in local leadership in rural Myanmar.

Local influence of the VTA has expanded since 2013 . . .

Since the first election of VTAs, their local influence and administrative power has expanded. Their formal duties have an emphasis on local administration, and they are also responsible for engagement with township-level authorities and development of the village tract. As there is no longer any officially designated role for the 100 household heads, the VTA role has gradually taken over many of the duties they previously had, such as issuing letters or bearing witness to agreements. VTAs are also responsible for dispute resolution, leading village activities focused on both social and development efforts, conveying news to and from the township, and other activities deemed by the VTA to be in the village tract's interest. Moreover, they are key actors in engagement with nongovernment institutions from outside the village, such as international development actors.

Since 2013 and the accompanying expansion of government services, VTAs also liaise more with other government departments both in the village tract itself and in visits to the township. These departments frequently include MADB, the education department, the settlement and land record department, and the health department.

The concentration of administrative responsibility has had mixed effects on SIM villages depending on their relationship with their VTA. Six of the 23 SIM villages that do not have a VTA living in their village reported their VTA had little interest in working to improve their villages. Instead, their VTA was focused on ensuring that opportunities from the township went to his own home village, rarely even visiting other tract villages (Case Study 8). One ethnic minority village reported being discriminated against by their VTA.

. . . as other formal leadership positions have taken a backseat

Non-VTA leaders have seen their local roles diminish. The experience of most 100 household heads is the clearest example of this decline. 100 household heads interviewed in the SIM research reported having much less autonomy to sign official letters, issue judgments over village disputes, or approve land transactions. Their main responsibilities are now to organize activities as directed by the VTA, such as spreading information about MADB loans, collaborating with the local midwife on a vaccination program for small children, or very localized dispute resolution such as marital disputes or fights between drunks.

Both villagers and 100 household heads also reported reduced ability to organize the villages for local collective works or joint village activities. This change was attributed

CASE STUDY 8: A Non-Tract Village Ignored by Their VTA

A village lies in Mawlamyinegyun township, 30 minutes from the township center but one hour by boat (the only possible transport) from the main village tract village. As a result, the VTA, who has held that title since the first VTA elections in 2013, rarely visits the village and only when he cannot avoid it.

In 2016, the nurse assigned to the village submitted paperwork to the township administrative office and township health department requesting a new and improved building for the health center. The process took time, and midway through the process, the nurse was reassigned to a new location.

Despite the application for a new center still being processed, the VTA made no effort to get approval from the township administration. Villagers felt that the VTA had been uninterested in the health center (and broader village development) from the start. As a result, the existing building is not safe and the roof is damaged.

Moreover, the existing health center serves all villages of the tract. However, only the village administrator of the village where the health center is located is asked to pay for the delivery of medicines and other supplies. The VTA does not collect funds from the other village administrators, which villagers consider unfair. In addition, the VTA asked villagers to pay for his transportation should he need to visit the village, for instance regarding MADB loans. The villagers complained that the VTA's neglect delays the development of the village.

to both their reduced status vis-à-vis the VTA and broader political changes that have lessened local leaders' ability to instruct villagers to do things. In cases where 100 household heads have retained local influence, their role has either shifted toward a focus on socioreligious issues or they are in particularly remote villages infrequently visited by the VTA.

There are some indications that in the villages most affected by Nargis, the reduction of the 100 household head's influence has been slower than in less affected villages. The field teams identified the most influential leader within each village (across sectors and limited to within-village influence); for nine of the 12 highly affected villages the most important leader was the 100 household heads. This compares to the moderately affected villages where of the 18 communities categorized as such, just five had the 100 household heads as most important and ten identified the VTA (Table 21).

Ten household heads also reported having both a diminished role and diminished authority in the village. Traditionally,

10 household heads work for the 100 household heads to maintain village arrangements, though in reality they were more likely colleagues. Now, however, their sole responsibilities are organizing villagers for mass meetings, and every few years voting in the elections for the VTA.

Village meetings in 2017 only occur occasionally and VTA elections are even more infrequent. As a result, some villagers found it difficult to remember who was their 10 household head as the role had so little weight. Whereas in previous years the position was seen as a key associate of the 100 household head, helping to maintain village order and ensuring security, today their role is greatly reduced. Without the formal assignment of elector, which is written into the 2012 Ward and Village Tract Administration law, this position could well disappear entirely.

"The role of a 10 household head is just to vote for the village tract administrator. Now no one really knows anymore who the 10 household head in the village is."

—Fishers

TABLE 21: Most Important Local Leader by Degree of Affectedness

Affectedness	VTA	100 Household Head	Informal Leader	Total
Highly affected	3	9	0	12
Moderately affected	10	5	3	18
Lightly affected	3	3	4	10
Total	16	17	7	40

Leadership characteristics: perceived and actual

Village respondents frequently attributed recovery from disasters and improved development standing to the qualifications and abilities of their village leader. In many cases, the ability of the village to gain improved infrastructure, be included in government programs (the Evergreen program is a notable example) and other benefits that come from

beyond the village, is based on the leader's ability to network, and willingness to volunteer their time and incur the financial costs of engaging at the township.

Economic standing plays a key role in whether a leader can be effective, largely because wealth is frequently a positive influence when dealing with township authorities, peer colleagues, and villagers. Having a higher education is another criterion for strong leadership, yet it falls behind wealth and having a strong network.

The qualities of a good leader as perceived by communities are changing, but are not backed up by election results

Interviewees across villages reported that their views on what was required from a good leader had evolved in recent years and since the election; however, this is not reflected in the identity of their leaders following the 2015 local elections.

In early SIM rounds, the traditional characteristics of 'Benevolence, Interest, Sacrifice' (*Say Ta Nar, War Ta Nar, Anit Nar*) was what communities identified as important for village leaders. In SIM 5, interviewed villagers identified other attributes they felt were necessary for a good leader. These included improved education, a strong network of contacts both in the village and beyond, 'intelligence' (defined as the ability to think critically about an issue), and the ability to speak some English—which is particularly important when dealing with NGOs.

"Today, a leader should be educated and able to speak English. When we visit the town, we can find that signboards are written in English. It is not good if we cannot read those. We do not even know where to go. So, as a leader, he should be able to speak and understand English."

—Small farmer

However, the data gathered on current village-level leaders does not reflect this change (Table 22). Compared to SIM 4,

TABLE 22: Leader Age and Education, 2013 and 2017, by Degree of Affectedness

Affectedness	Leader Age 18–45		High School Graduate or University	
	2013	2017	2013	2017
Highly affected	5	6	6	4
Moderately affected	9	7	14	7
Lightly affected	4	2	6	4
Total	18	15	26	15

village leaders in SIM 5 saw a similar proportion of young leaders (between the ages of 18 and 45) but a significant reduction in the proportion of well-educated leaders (either a high school graduate or having attended university).

Leadership changes following the 2015 elections

The most recent VTA election was held in late 2015/early 2016 following Myanmar's national election and led to notable local leadership changes (Table 23). Particularly noteworthy was the high turnover in highly affected villages as a result of both elections. Of the 40 villages in the SIM panel, 18 are so-called 'tract villages,' where the VTA tends to live. Of these, 10, or 59 percent, had changed VTA by March 2016. Of the remaining 22 villages, 13 (59 percent) changed 100 household heads shortly after the election. Though there is no formal process for 100 household head selection, as they are perceived as assistants to the VTA when a new VTA is elected, new 100 household heads often follow. Given their position as the most visible local leaders, such turnover has implications for local leadership dynamics—especially as the appointment to 100 household head is often based on personal relationships with the VTA rather than on ability or administrative skill.

Factors driving leadership changes

The common reasons behind the shifts in leadership can be divided into two categories. First, there are the cases, five during the most recent local elections, where the previous leader voluntarily vacated the position. The reasons for this tended to be old age, a reluctance to continue shouldering the burden of local leadership, or the ability to maintain family control by (informally) passing the position on to a relative. The other group of reasons, accounting for 18 of the local leader changes across the SIM panel, centered on the dissatisfaction of the community and involved cases where the village leader lost out to a competitor. Examples included perceptions of localized corruption and a view that the old leader was not educated enough or unable to create the networks that would advance the interests of the village.

Localized corruption was defined as the leader asking for money when called upon to resolve local disputes, distributing aid to the village unfairly, and, most importantly, the

TABLE 23: New Leaders Following Local Elections

Affectedness	2012/13 Local Elections	2015/16 Local Elections
Highly affected	8	8
Moderately affected	12	10
Lightly affected	6	5
Total	26	23

view that the VTA only delivered opportunities from the township to their own home village. In these cases, villagers reported that the VTA would rarely visit other tract villages and, in response, the other villages in the tract would try hard to remove that VTA and install one from their own village.

The leaders who resigned tended to be those originally appointed by the GAD prior to the reform period and who had won their first election in 2012. These leaders had proven their willingness to contribute time, money, and effort working for the development of the village. But after many years of work and the increasing burden on the VTA without any salary,²¹ many were getting tired of the position and sought to resign. The increasing willingness of villagers to be vocal in their opposition to certain VTA decisions was also a reason cited by some former VTAs as a contributing factor to their retirement.

Retirements create leadership gaps

The departure of some village leaders created a gap where few qualified candidates for the position existed and the abilities of local leaders declined. Villagers who were well qualified to lead the community had little interest, as they thought it more important to focus on their own livelihoods and businesses, while those who were willing to run for the position often lacked management and communication skills, had less influence in the community than those they

replaced, and did not have the beyond-village network that remains a key determinant of government support a village will receive.

The new recommended criteria on age and education set by the government for the VTA under the 2012 law also contributed to leadership changes in 2015, namely that the VTA must be at least 25 years of age, have 'sufficient resources for his livelihood' and a 'fair education.' While not compulsory, in many cases the GAD provided an interpretation that new VTAs should be well educated, be at least a high school graduate and preferably a university graduate, and be under the age of 30. Party affiliation was a further driver of leadership turnover: most of the new VTAs were strong supporters of the National League for Democracy and those VTAs who were members of Union Solidarity and Development Party were less likely to win.

New roles for women

Village leadership opportunities, previously almost exclusively restricted to men, are expanding, albeit slowly, to women. Six villages across the SIM panel now have a female 10 household head, and despite the decline in regular influence of this position, the increase means that women now have a more direct voice in local elections to select VTAs. One result of this change was the election of the first female VTA in the SIM panel (Case Study 9). While data following the latest VTA elections is not available, prior to the 2015

CASE STUDY 9: A Village Tract Elects a Female VTA for the First Time

A 48-year-old woman was elected as the village tract administer in 2015. She is a university graduate whose livelihood is running a grocery shop, a small bamboo plantation, and trading in paddy. She and her household are among the wealthiest in the village. Her extended family has a history of village leadership (her father was the village leader), and they all are active in their work for the development of the community. For example, her younger brother founded a free school in the village and later became a Yangon Regional Member of Parliament.

When the 2015 election arrived, she did not plan to participate because she was occupied with her business. However, everyone in the village wanted her to become the 10 household head and vote in the election. She agreed and then the *ya mi ya pha* (village elder) and the local monk lobbied her to run for VTA. She agreed to that and ended up winning the election unopposed.

As a VTA, she is also responsible for the challenges facing other villagers. For example, she is currently negotiating with farmers whose land lies along the route where they plan to build an intra-village road. Her ability to manage both the social and financial aspects of the VTA role has won her the respect of most villagers, though she is disliked by some casual laborers because she has imposed fines for certain activities (including unlicensed fishing and cutting bamboo) and providing only those people she thinks are financially deserving with the recommendation required to take a loan.

²¹ VTAs are supposed to receive a stipend from GAD plus allowances for the cost of their duties. However, the disbursement of this money appears extremely varied across townships.

election there were just 42 female VTAs across the entire country, or 0.25 percent.

The broader political transition has made a significant contribution toward women leadership. Daw Suu is seen as an inspiration and is making it acceptable for women to be leaders in the eyes of both men and women. While this process is understood to have begun in 2012 with her election to a parliamentary position, it has expanded since 2016 and her ascension to the role of state counsellor.

The expanded participation in leadership roles for women was attributed in large part to the Evergreen program and other aid projects that required women's involvement in local management committees. Women also played an expanded leadership role in some cases by default: as livelihood opportunities improved, men were frequently too busy to engage in village affairs and so women replaced their husbands' positions, including in some cases as 10 household heads.

Women leaders were perceived by communities as being more supportive and open and were popular among research respondents. Where they existed, younger leaders also received good reviews, as they were more willing to travel to the township on behalf of the village than older leaders and are seen as more active on behalf of the village, especially when it comes to developing a strong network of contacts at the township level.

Informal Leaders

Informal leaders in Ayeyarwady Delta villages include the village elders, village monks or pastors, political party organizers, and the heads of village development committees.

Wealthy businessmen in the village also often have an informal leadership role. Their activities are varied, with different individuals engaging in many different roles with the exception of administrative duties that are the sole preserve of the VTA. Mostly, however, informal leaders engage in event organization for religious occasions, organizing collective action for village infrastructure development and social welfare, dealing with nongovernment outside actors for local needs, and a very informal role in local dispute resolution (providing advice where to go and whom to approach).

Even in villages where they have little formal roles, religious leaders (generally monks, though pastors in Christian villages) have had persistently high levels of influence in villages since well before Nargis.

Wealthy individuals in the village have also maintained their influence. In other cases, newer informal leaders have appeared, such as political party representatives who appeared in many villages prior to the 2015 election and worked aggressively. Since the election, such activity is reduced, but in general local activism among informal leaders has increased. In some cases, such leaders have sought to bypass the VTA or other local administrative positions and bring issues to the attention of the township or even local Members of Parliament directly.

In general, informal leaders maintain good relationships with formal leaders and hold different spheres of direct influence. Nonetheless, there are occasional cases of power competition between the two. While power competition does arise, for the most part the village leadership is able to maintain a balance between the administrative roles played by the 100 household head and VTA, and the more socio-religious side of the village led by informal leaders.

6

Infrastructure and Housing

The condition of village infrastructure and housing reflects how the condition of villages has evolved since Nargis and what the continuing effects of the disaster are. While there has been significant investment in infrastructure from both government and donors since Nargis, SIM villages continue to face major constraints. Roads have been improved, but the lack of quality or inability to use them during the monsoon means villagers are unable to rely on them. This analysis first assesses the state of village-level infrastructure before turning to the question of housing and whether communities' houses have returned to (or improved beyond) pre-Nargis levels.

Village Infrastructure

Overall, since SIM 4, most villages have experienced some improvement in local infrastructure despite the significant gaps that remain (Table 24).²² The most common

²² Infrastructure quality is defined as follows: **housing** (“good”: most houses are of a high quality, made of concrete, some with two stories, all are in good condition; “fair”: most houses are made of wood with zinc/tin roofing, most are in good condition; “poor”: broken down, homes in need of repair, many are made of bamboo walls and nipa palm roofs); **schools** (“good”: made of concrete, well constructed to withstand storms, large enough for the number of students to grow; “fair”: older building in need of updating but fit to purpose and just large enough for current students; “poor”: run-down building in need of repair, not large enough for current student body; “missing”: no school building in village); **water/sanitation** (“good”: easy access to ground water and/or storage tanks and/or well-maintained water ponds; “fair”: enough water ponds, no concerns over water shortages, access to ground water via pump; “poor”: water ponds are in bad condition, vulnerable to salt water intrusion and villagers have to buy water during dry season; “missing”: not enough water ponds for village

improvements have been to local roads, to monasteries, bridges, schools, and water ponds—all were found in at least half of the SIM panel villages.

While village context is the most important factor in determining the quality of local infrastructure, Nargis' shadow remains. Villages highly affected by the cyclone continue to show less likelihood of having improved across the board and infrastructure is no different (Table 25). For infrastructure, the challenges of restarting livelihood activities due to asset and manpower losses combined with high levels of debt and a lack of confidence undercut the ability of highly affected villages to improve infrastructure on their own. Only two of the twelve highly affected villages demonstrated improved infrastructure and this was thanks mainly to strong local leadership.

Local leaders in these communities included wealthier individuals who could make large cash contributions to their villages' development, could pay for labor costs where others could not, and had both a strong interest in developing the village and good networks beyond the community upon which they could call. Villages where infrastructure development or renovation was slow, often attributed it to a lack of manpower, poor connectivity to a township, and few job opportunities compared to other villages.

needs, individual households have to store own water); **health** (“good”: has an own functioning health center or is close to town with access to a district hospital; “fair”: has health care staff in the village but not well equipped beyond basic services for children and pregnant women; “poor”: no permanent presence, but regular visits by health care staff for natal care/child vaccinations; “missing”: no staff in village and rarely visited because of remoteness and poor transport options, villagers have to travel to other village for basic care, rely on traditional medicine).

TABLE 24: Quality of Key Infrastructure, 2013 and 2017

	2013				2017			
	Good	Fair	Poor	None	Good	Fair	Poor	None
Housing	13	19	8	0	13	18	9	0
Schools	23	10	2	5	19	11	7	3
Water	11	19	8	2	14	17	8	1
Health	10	3	0	27	16	7	7	10

TABLE 25: Good Quality of Key Infrastructure, by Degree of Affectedness

Affectedness	Housing	Schools	Water/ Sanitation	Health
Highly affected	3	5	2	1
Moderately affected ²³	6	11	7	12
Lightly affected	4	2	5	1
Total	13	18	14	14

Infrastructure status across SIM villages

The status of infrastructure differs from village to village, but there are clear patterns that emerge across the SIM panel, with certain sectors of infrastructure having been the focus of recovery efforts while others remain in poor quality.

Social service infrastructure

Even though five health centers were built over the past four years, for a total of 17 in the panel, more than half of SIM villages still do not have one. Further, having a village health center is not determinative of ‘good’ access to health services, as many of the centers that do exist, as well as many schools, are often of poor quality. During the research, ten villages highlighted the lack of a health center and said that they wanted the government to build one, but that no assistance had not been forthcoming. In the remaining villages, when interviewees were asked about health care, they cited that they were either very small villages with relatively easy access to a larger village with a clinic, or were near towns that offered improved health care services.

Assessed by affectedness, of the twelve highly affected villages, only one had good access to health care compared to 12 of 18 moderately affected villages. Lightly affected villages also lagged behind, likely a reflection of aid disparities between lightly affected villages and others in the SIM panel.

²³ The relatively better quality of infrastructure in moderately affected villages may be attributed to better connectivity and higher aid levels.

On education, there has been notable progress since Nargis on expanding the number of school buildings across SIM villages. The number of villages without any school buildings has declined from seven villages in SIM 4 to just three in SIM 5, most of which are very small villages (no more than 44 households). The one exception is near a very large village that can provide education up to the high school level. Comparing education access to affectedness, there is little correlation; instead, school buildings tend to reflect the size of a village.

Since 2008, SIM has counted 50 school improvement projects across 36 SIM villages, a mix of repair projects, and construction of new schools. However, the SIM research team found that subcontractors responsible for construction frequently failed to build suitable buildings. Further, apart from providing the money, the government failed to inspect either the construction process or monitor schools after completion. As a result, seven villages reported that school buildings were in poor condition despite having been built recently.

Transportation and connectivity

The quality of transportation infrastructure varies widely across the SIM panel and is closely correlated with the degree of affectedness in Nargis. Most villages with ‘poor’ connectivity²⁴ in 2017 were highly affected by Nargis, accounting for eight of the twelve poorly connected communities. Furthermore, villages in the highly affected category are almost exclusively only reachable by boat—an inherently more vulnerable and uncertain mode of transport.

While transportation infrastructure improvements were a regularly cited need in many communities and there is some evidence of a new focus by both government and self-help, community driven projects, the villages most vulnerable to Nargis-like storms remain both poorly connected to urban centers and fully dependent on water transport. Table 26 illustrates the linkage between infrastructure quality and

²⁴ Villages with a travel time to the nearest town of 30 minutes or less are defined as having ‘good’ connectivity; villages with a travel time of 30 minutes to 1 hour have ‘fair’ connectivity; villages with a travel time of over 1 hour have ‘poor’ connectivity.

TABLE 26: Number of Villages with Good Quality of Key Infrastructure, by Connectivity

	Houses	Schools	Water	Health
Good (16 villages)	7	8	6	8
Fair (12 villages)	7	6	9	4
Poor (12 villages)	2	0	1	2
Total	14	14	16	14

connectivity to township centers. Villages that have good or fair connectivity are more likely to have good access to various forms of infrastructure. This reflects an improved ability to access materials, expertise, support, and engagement from authorities compared to the most remote communities.

Since SIM 4, there have been some improvements in communities' transportation infrastructure (Table 27). Seven villages reported either that a new road to the township center had been constructed, or that an existing road had been improved. Seventeen villages have had improvement work done on inter-village roads (many of which are just wide enough for a motorcycle) while 13 villages reported that there were new public transport options, generally motorcycle taxis or local bus/truck services, available to them.

A small number of villages also reported that boat access had improved their connectivity, with one village located near a town becoming a junction for trading boats following improvements to their jetty (rebuilt in steel instead of wood).

Improved connectivity has enabled labor groups to organize more easily and access employment opportunities in other villages, eased resupply for shopkeepers, and given local brokers (especially fish brokers) access to new markets including Yangon. Some farmers reported that they now sell their paddy harvest directly to brokers in town rather than waiting for them to come to the farm gate.

However, improved access in and out of villages does come with a social cost. For example, villagers reported an increase in the number of youth who drank alcohol excessively, while

unsafe motorbike driving on the roads had led to more accidents. In villages close to town, local shopkeepers reported they were struggling as villagers could now access township stores that had cheaper prices and more variety in their products.

Connectivity is not only about the ability to move people and goods, but also information. The rise of mobile telecommunications around Myanmar has been well covered by journalists and researchers alike, and its impact is seen across the SIM panel. In 2013 during the SIM 4 research period, not one of the SIM villages had mobile Internet. In 2017, every village had a 3G network, and interviews with key leaders and focus groups were often arranged via mobile phone or even via Viber. Though almost one-third of SIM villages continue to struggle with poor physical connectivity, they are now connected to the outside world via the Internet.

Good access to 3G Internet is beginning to affect the local economy, as well as allowing villagers to easily communicate with friends and family beyond the village. While not yet widespread, SIM research found examples of villagers using 3G to check commodity prices, find out about job opportunities in town or in Yangon, and use GPS and weather forecasts in their fishing activities.

Water, sanitation, and hygiene infrastructure

At the village level, as water, sanitation, and hygiene infrastructure primarily reflects drinking water infrastructure, community toilets (especially on school compounds) are also important assets. Since Nargis, the provision of a continuous supply of drinking water to communities has been a focus of government and international donors alike, generally taking the form of drinking water pond improvements. Yet, nine years after Nargis just three villages reported having improved water sources—defined as bore wells or other direct access to ground water.

Water storage has received increased investment, with many villages since SIM 4 having a 5,000-gallon water storage facility installed in their villages, which is generally located in the school compound so as to ensure water supply for students. However, villages often still face challenges accessing fresh water during the dry season, when salt water intrusion

TABLE 27: Connectivity by Degree of Affectedness

Affectedness	Total	Connectivity to Nearest Town			Mode of Transport	
		Good	Fair	Poor	Boat	Road
Highly affected	12	1	3	8	11	1
Moderately affected	18	10	7	1	8	10
Lightly affected	10	5	2	3	6	4
Total	40	16	12	12	25	15

into the water ponds is common. During these periods, villagers have to either travel to access water ponds in other villages or purchase drinking water.

Other public services

One of the most important issues for communities in the years following Nargis was ensuring there was a village building able to withstand bad storms in the future. Such shelters would provide space for both storing supplies that they needed to survive a storm, and also a place where those with less resistant homes could shelter. While in a few cases formal cyclone shelters were constructed, for the most part improvements to existing structures were made. The most common, well-built structure in most villages is the monastery (or in Christian communities, the church). Improving these religious structures (strengthened monasteries were observed in eight villages, churches in two villages) served a dual purpose therefore, both as a religious building and as a way to reduce the impact of disasters, and has been a key focus of community self-help activities since Nargis. In some cases, both government and NGOs have supported such efforts, but outside funding to improve religious buildings is uncommon.

Other public services that have been funded and implemented by either the community itself or outside actors include embankments, electricity provision (two villages, the first indication of the national electrification project), mangrove plantations (three villages), a village administration office (two villages), and a community hall (two villages). Notably, all communities have access to electricity through self-financed home solar panels, though the proportion of households who have been able to afford them varies from village to village. Since SIM 4, there has been occasional donor support for communities to purchase solar panels but no systematic efforts to develop localized electrification.

Villages left behind

Villages where infrastructure remains of a poor quality across sectors tend to suffer from at least one significant problem that has prevented them from realizing any improvements. The research team found that the challenges that could retard infrastructure development to this level generally revolved around affectedness and location (Table 28). Overall, about one-quarter of villages are considered left behind.²⁵

²⁵ Villages were defined as “left behind” if at least two types of infrastructure (housing, schools, water/sanitation, health) were identified as either of poor quality or nonexistent.

TABLE 28: Villages ‘Left Behind’ by Infrastructure Development

	Villages Left Behind (11)
Highly affected (12 villages)	4/33%
Moderately affected (18 villages)	3/17%
Poor connectivity (12 villages)	6/50%
Fair connectivity (12 villages)	3/25%

A new focus on embankments: changing infrastructure priorities

During SIM 4 research and in earlier rounds, villagers prioritized transportation, education, and health care infrastructure as their highest priority needs. In 2017, however, villagers reported that they increasingly valued livelihood-related infrastructure and electricity as the most important needs for their communities.

The clearest example of this shift toward prioritization of different forms of infrastructure is embankments, newly emphasized for their contributions to farming livelihoods and village safety. Six villages had received embankment decades before Nargis as part of a World Bank project, and more and more villages are either asking the government to support embankments or trying to build them themselves.

In one example, farmers from 17 different villages in one part of Bogale township joined together in 2017 and submitted a proposal to the government. Their plan was to create one large embankment protecting 20,000 acres of farmland from all the villages. In other cases, farmers have worked to build small embankments, either by hand or by renting machines, around their own paddy land in an effort to reduce both flooding and the risk of pests. However, such investments are expensive and out of reach for many small farmers.

Financial support for infrastructure comes from different sources—and funders have varying priorities

Infrastructure improvements have been driven by a number of factors, including early on NGO intervention, increasing government funding over time, and collective action at the village level. The political transactions and a shift toward investment in infrastructure have also been major contributing factors for improvements.

Government, (national and international) NGOs, and village self-help groups are the most common sources of funding for local infrastructure projects. As shown in Table 29, there have been a higher number of transportation infrastructure projects (116) than any other sector, with a roughly even split between government-funded, NGO-funded, and village-funded activities. This distribution highlights the importance placed on transportation and improving the quality of intra-village tract roads and motorcycle tracks as part of a broader effort to improve the local economy and livelihood opportunities (Case Study 10).

This unity over prioritization ends at transportation, however. Health and education infrastructure is dominated by government funding, with a total of 36 projects across the panel compared to 21 for NGO and villages sources

combined. At the same time, NGOs have been much more focused on improving water and sanitation (29 projects) while communities have targeted improvements of religious buildings as their key focus (22 projects).

Reviewing infrastructure projects by affectedness, there appears to be some correlation between affectedness and the number of projects but this depends on the funding source (Table 30). Of the two largest funders, government and NGOs, the government has financed fewer projects, on average, in highly affected communities. By contrast, highly affected communities have received as much support from NGOs as moderately affected ones. The limited sample size notwithstanding, the evidence suggests that the post-Nargis NGO efforts to reach the most affected communities have been very important for recovery. At the same time,

TABLE 29: Infrastructure Funding Source by Sector

	Roads	Schools	Clinics	Religious Buildings	Water and Sanitation	Other
Government	29	25	11	0	8	12
NGOs	25	12	0	3	29	16
Village initiative	39	6	3	22	2	7
Private sector	10	5	1	7	6	2
Joint	13	2	0	3	1	5
Total	116	50	15	35	46	42

Note: Number of projects across the 40 panel villages since Nargis.

CASE STUDY 10: Improved Transportation Infrastructure Results in Improved Livelihoods

One village in Pyaypon township is near the open sea, with an economy that is largely dependent on fishing. It is five miles from the main village in the tract and is accessible by car, either along the road or via the beach. Most villagers work as fishers and a smaller number as fish collectors who then sell the catch to larger markets. Some households also have secondary livelihoods running grocery shops of different sizes or workshops for motorcycles.

Before Nargis the road that connected the village to the tract flooded regularly and villagers could only go by foot, with water often up to their knees. The road condition in the years after Nargis was little better. In 2016, however, the community came together to construct a better road.

Now that they have this new road, both cars and motorcycles can easily access the village and a few grocery stores even sell petrol and diesel to outsiders passing through. It has become much easier for shopkeepers to keep goods in stock. Before, they had to ask boatmen to go to town and buy goods, which could often take two days. With the road, they can access the township market within half a day.

The new road has benefited more than shopkeepers, however. There are new job opportunities to work as motorbike taxi drivers and cycle carriers, which have allowed fishers to supplement their incomes. Some villagers have opened up workshops to repair both bicycles and motorbikes. There is now a travel service from the village tract via ferry bus, and two local shops act as points of sale for tickets. Perhaps most importantly however, the village’s lobster catch can be transported directly to Yangon, where it receives as much as five times the price of the market they had previously sold to.

TABLE 30: Number of Infrastructure Projects in Villages by Funding Source and Degree of Affectedness

Affectedness	Government	NGO	Village Initiative	Private Sector	Joint Contribution
Highly affected	17	37	21	8	1
Moderately affected	45	39	32	19	15
Lightly affected	23	9	26	4	8
Total	85	85	79	31	24

government initiatives to expand service delivery have been hampered by the difficulties of reaching the Delta's most remote and vulnerable communities.

Inter-Village Infrastructure

Investment in inter-village infrastructure is much more reliant on government than village infrastructure and as such as lagged behind. SIM 5 found eight inter-village road projects in six villages and township road projects in five villages (Figure 5). The majority are solely funded by government, though inter-village road projects are also supported by villages and private sector contributions. Township roads are fully reliant on the government, with the exception of one village where the community has collected money to help advance the project.

Village Housing

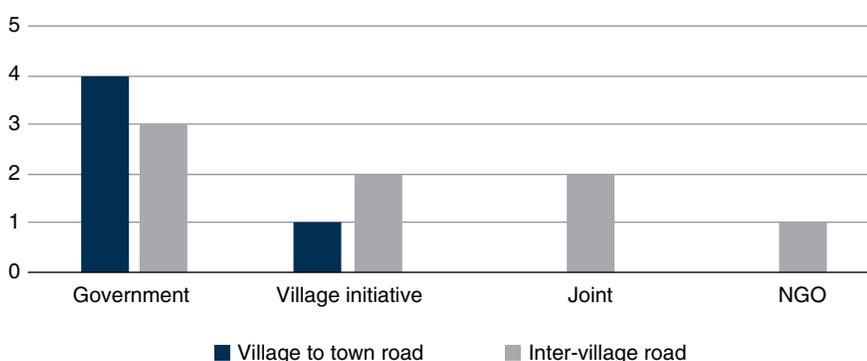
Housing quality across SIM villages has improved

Approximately 80 percent of households reported the quality of their house had improved compared to before Nargis.

Those households reporting improvements tend to have at least one of the following characteristics: migrant income, multiple local income sources, many working family members, or external assistance. Migration was particularly critical: 70 percent of households with migrant family members reported having built entirely new houses since Nargis.

For the 20 percent who have been unable to improve the quality of their housing, it was generally attributed to at least one of the following challenges: reliance on only one income source, which meant a high ratio of dependent family members, health shocks, a lack of education to get a better job, or social problems like alcohol or gambling addictions.

In a small number of communities particularly badly affected by Nargis, villagers reported that they were reluctant to invest in improved housing, as a future storm would simply destroy the houses. In these villages, those who could afford it invested in alternative housing in the township rather than in stronger village homes. Beyond these villages, there was little difference in housing improvements by degree of affectedness, as housing was more a reflection of economic ability to invest than the longer term effects of Nargis (Case Study 11).

FIGURE 5: Proportion of Funders to Inter-Village Infrastructure Improvement

CASE STUDY 11: Home Improvements Thanks to Migration

U Hla Mg is 57 years old and the head of a group of carpenters in a village in Dedaye township. He has three sons and two daughters and participates in many village development activities. Before Nargis, his family used to be among the poorest in the village, living in a home with a nipa palm roof and bamboo walls. He worked as a small fisherman, carried water to government staff houses, and during the summer season worked as a permanent farming laborer. Later he did construction work as day laborer.

His wife also did various jobs, including picking vegetables for the farmers that she would sell in town, opening a carom-board and betel shop, and selling boiled corn and watermelon slices in the village. Although they worked hard, their financial condition was not getting better, and their eldest son had to quit school because they could not afford the expenses. Their second son made grass mats and sold them at wholesale prices to pay for his school expenses; he passed the matriculation exam.

After matriculating he went to Yangon and made a plan with some friends to move abroad. His family pawned the plots of land where their home was along with that of two other family members. They raised K1.2 million with 10 percent per month interest and borrowed a further K600,000 at 20 percent interest from a private money lender. With this money, the second son was able to move to Malaysia and found a good factory job with a friendly employer. On holidays, he cleaned the factory compound for a side income and also worked as a security guard at night.

At first, he made K200,000 per month, but after one year had doubled it to K400,000. He eventually became a supervisor after five years. Within two years, his remittances allowed his family to repay their debts and reclaim their house plots. In 2010, his elder brother followed him to Malaysia but worked in a different factory and had a bad experience, returning to his home village after just one year. He tried again, however, and this time got a job in the same factory as his brother. Together they could send K1 million a month to their parents. In 2011, their parents invested the remittances by buying house plots. They bought five plots in the name of their daughters and sons. Following improvements, the house plots they bought for K5 million are now worth K30 million.

In 2012, they started to build a new house with remittance income. They took their time completing it, but in 2016 their house was finally finished. It is a very modern house, with amenities like a TV, electricity transformer, refrigerator, and other furniture. It cost K25 million.

In 2013, the youngest son followed his brothers after failing the matriculation exam. From then on they sent back remittances every two or three months, each time sending around K6 million. In 2014, the eldest son returned and married a woman from their village. His parents gave him the house plot they had bought in his name. That year they also donated K3 million to the monastery.

In 2016, the youngest son also returned to the village and married a Shan woman. Then they both migrated to Thailand for work. The middle son had come back for holidays in 2012 before inter-religious violence erupted. His parents and other family members asked him not to go back to Malaysia. He thus stayed in the village and started working as a money lender, providing loans at low interest rates to villagers. He also ran a grocery shop. He made friends with Pact Myanmar committee members and put his money in the committee to lend. His youngest sister is now attending high school.

The youngest son helps manage his parents' financial situation and has saved K10 million for each of them in a bank account. Although their financial condition is much improved, U Hla Mg still works as the head of a group of carpenters in the village and always participates in the village development activities. He said: "I have never thought that I will have this kind of life, not even dreamt of this life."

Factors driving new home designs and building decisions

Households are altering the kinds of homes they build based on their experience with Nargis and other weather shocks, as well as expectations of what the effects of climate change may bring. Many households, especially in moderately and lightly affected villages, sought to invest in homes that would be better able to withstand future cyclones or other extreme weather events.

Home improvements primarily meant improved materials, though the research team also observed new designs in anticipation of flooding or high winds. In the past, poorer homes were made of bamboo with nipa palm thatch roofs, while better off homes had wood frames and tin roofs. SIM 5 found that newly improved homes tend to be constructed of concrete bricks and cement with wooden upper frames and tin roofs. Prior to Nargis, such homes were very rare in the Delta and especially uncommon in villages. Now, there are several such homes in most villages. Better post-footings foundations are also increasingly common as they better withstand termites—a constant threat after flooding. While improved protection is an important driver, the change also reflects the desire to have homes that are similar to ones found in towns—and the increasing cost of wood as a construction material to the point where it is almost as expensive as concrete and cement. Villagers reported that they were even considering building their bathroom and toilet within their home, an amenity that has almost never been found in rural areas.

Going into debt to finance home construction is increasingly common, though households mostly reported that such debt was manageable. Such households generally have saved almost enough to build a new home but reported that the construction costs almost always exceeded expectations. As

a result, they would need to take a small loan to put the final touches on their home. While this appeared to be a common and largely anodyne practice, there were cases where the expense of a new home had driven households deeply into debt.

Social factors behind new houses

Social pressure now also influences villagers' decisions to improve their homes. SIM 5 research found that among households where at least one person had migrated, informal competition existed to have good quality housing. While the first objective for families with remittance income is a better ability to cope with daily basic needs, when remittances reach a certain level, the family members who remain in the village turn to opportunities, investing in income generating activities, buying land, and making housing improvement.

One calculation that households make is that they want to be able to host guests of the migrated family member, in some cases the migrant worker's senior colleague or older friend, in a good quality house. Further, housing improvement is a change in the village that is easy to visualize and to show off to both other households with migrant workers—and to the household member themselves when they return as evidence of their hard work on behalf of the family.

In one mixed village where both Buddhist and Muslim villagers live, the Buddhists sought to improve their housing conditions. In this village, while in a minority, the Muslim community tends to own more land than the Buddhists and are wealthier. Buddhists in the village reported that they wanted to ensure that when guests came to the village, they would not be embarrassed by the low quality of their accommodation compared to the Muslims.





7 Recovery and Resilience

The SIM 4 report examined five years of post-Nargis recovery efforts and found that while some villages or groups within villages were on track to recover, or had recovered, there was more variation than pattern. Villages and groups (socioeconomic, livelihood, and other) within those villages recovered differently and at different paces, with few linear trajectories for recovery visible in the experiences of the SIM panel. And most importantly, it was clear that there were many factors determining the pace of a village's recovery and that the interplay between those factors resulted in many possible outcomes. In sum, the situation in 2013 was complex, with just a handful of communities that could be said to have recovered.

Four years later, the situation is quite different, though the complexity of what drives recovery remains. Evaluated for economic recovery and the standing of social relations, almost two-thirds of villages, especially those only lightly or moderately affected, can be described as recovered to pre-Nargis levels (Table 31). Recovery from a disaster for either a household or a community is dependent on a wide range of factors that stretch from the degree of affectedness to geographic location to assets that survived the event, as discussed in this chapter.

TABLE 31: Recovery of Villages by Degree of Affectedness, 2017

Affectedness	Recovered	Not Recovered	Total
Highly affected	4	8	12
Moderately affected	13	5	18
Lightly affected	8	2	10
Total	25	15	40

But at the same time most villages remain highly vulnerable to weather and climate shock, are experiencing social change stemming from the Delta's migration boom, and continue to rely on primary livelihoods that are as uncertain as ever. While the situation facing SIM villages has no doubt improved over the past four years, their position remains tenuous.

As SIM 5 seeks to understand not just how communities have recovered from Nargis but how they will fare in the future and in future disasters, this chapter also presents an assessment of resilience in the Ayeyarwady Delta. Through both a review of existing literature and fieldwork experience, the SIM research defines resilience as a household's or community's ability to recover faster from a disaster and reduce the impact of a disaster.²⁶

Recovery

Using SIM's longitudinal data and its field experience, the research team identified a variety of factors that contributed to the economic and social recovery of households and communities over time. Researchers assessed the importance of these factors within 1–2 years after Nargis (SIM 2 and 3) and 9 years after Nargis (SIM 5).

²⁶ The analysis in this chapter is based on the assessment of recovery and resilience by the SIM 5 research team. Researchers were able to compare villages across the panel whereas villagers tended to compare the situation of their village only with that of other villages in the tract. Consequently, data may on occasion diverge somewhat from those provided by villagers.

Household recovery

The SIM team identified 18 factors that helped households recover from Nargis (Table 32). There is no difference in the importance of these factors by degree of affectedness.

In the immediate aftermath of Nargis there are wide range of important factors that determined a household's ability to recover and the bulk of those that scored as very important (i.e., '1') were livelihood-centric. The survival of economic assets, availability of jobs, management of resources, availability of affordable credit, and number of family members fit and able to work were all identified as very important to household recovery in the years immediately following Nargis. A clear exception to this was ownership of land, which fared poorly, likely due to the fact that in the aftermath of the cyclone, land itself could bring little benefit until a return to farming was possible.

TABLE 32: Importance of Various Factors for Household Recovery

Household Factors	1-2 Years after Nargis	9 Years after Nargis
Having economic assets survive Nargis	1	2
Owning a large amount of land	2+	2-
Owning a small amount of land	3	3
Availability of local job opportunities	1	1
Ability of at least a family member to migrate	2+	1-
Remittances from migrated family member(s)	1-	1
Improved access to markets	2-	2-
Availability of affordable credit	1	2
Entrepreneurial spirit and initiative	2+	1-
Good management of household resources	1	1
Having a male household head	3+	3
Having a good number of working family members	1	1
Family members having good health	1	1
Good relations within the household	2	2
Good relations with extended family	2	2
Having good social networks beyond the family	2+	2+
Having good quality housing	2-	2-
Availability of externally provided aid	1	2

Note: The codes are: "1" very important, "2" of moderate importance, and "3" less important for recovery.

Factors of a more social nature generally scored as less important, perhaps because relations were strong and could be relied on. Good relations with family, the importance of having a male household head, and the ability to be entrepreneurial were all seen as moderately important in the early stages of disaster recovery.

Over time, however, the importance of various factors has changed. In 2017, the importance of migration and remittances has increased as has the ability to be entrepreneurial. At the same time, the importance of credit access has diminished, likely a reflection of the comparative ease of borrowing in 2017 compared to 2008, as has the importance of external aid. This latter finding indicates that in relative terms, the impact of post-disaster assistance diminished over time as livelihoods recovered.

Community recovery

A similar exercise was undertaken at the village level, this time examining the importance of 16 specific factors to community recovery after the cyclone (Table 33). While there is some overlap between household and community factors,

TABLE 33: Importance of Various Factors for Community Recovery

Community Factors	1-2 Years after Nargis	9 Years after Nargis
Level of development before Nargis	2	2
Diversified village economic activities	1	1
Availability of land	2	2-
Availability of labor	2	2
Improved access to markets	2	2+
Higher migration levels	2	2+
Availability of affordable credit	1	2
Good leadership	1	1
Social networks	1	1-
High levels of membership in social or livelihood groups	1-	2+
Mutual help freely given (household to household)	2+	2
Level of participation in cultural events	2	2
Joint village infrastructure activities	1-	1-
Good quality village infrastructure	1	1
Livelihood aid	1	1-
Infrastructure aid	1	1

Note: The codes are: "1" very important, "2" of moderate importance, and "3" less important for recovery.

there are also key differences, particularly surrounding social relations and leadership. Again, no difference was identified with regard to the degree of affectedness.

The findings at the community level are more balanced between economic and social factors than at the household level, especially in the shorter term. Factors such as leadership and social networks are identified as extremely important within two years after Nargis, though several social factors have declined somewhat in the longer term. This reflects the importance of a village's ability to work together in the immediate aftermath of the disaster, whereas in the longer term, as things were returning to a semblance of normal, more individualistic behaviors emerged. Nonetheless, the importance of leadership remains, a reminder of the essential role that local leaders continue to play not in keeping order, but in getting villagers to work together for mutual benefit.

Diversification of village livelihood activities is clearly identified as a key indicator of a community's recovery abilities in both the short and long term. This clearly fits with the findings in Chapter 2, which indicated that new livelihoods in the villages were closely correlated with an improved economic context. High levels of migration and improved access to markets were found to be of only moderate importance in the early post-disaster period when aid was more significant, but increasingly important as time went on. For both, this likely also reflects the limited connectivity and opportunities (for either economic migration or improved prices) in pre-reform Myanmar and the rapid change on both fronts that has occurred over the past five years.

Aid is ranked not only as highly important in the shorter term, but also remains a key factor in the longer term. The slight decline in livelihood centric aid reflects a logical decline in the impact of livelihood assistance, as people's occupations were returning to an appearance of normal. At the same time, the infrastructure deficit that predates Nargis has meant greater infrastructure needs of villages in the longer run. As with households, credit access begins as extremely important but moderates, reflecting the expansion of affordable credit covered in Chapter 3.

In sum, we can see that in the early recovery period following a disaster, social ties bringing the village together to act and the ability to generate cash (whether through aid, diverse livelihood activities, or loans) were the key factors for community recovery. As time went on, other market factors began to play ever larger roles, while social ties receded somewhat.

Resilience

Analysis of the SIM 5 research and evaluations by the research team found that of the SIM villages, just six villages were considered resilient with another eleven somewhat resilient. Table 34 shows that approximately one-half of highly and moderately villages were resilient or somewhat resilient but less than one-third of the lightly affected ones. The low proportion of lightly affected villages defined as resilient reflects their lower vulnerability to shocks like Cyclone Nargis and, therefore, their lack of preparedness or perceived need to prepare for disasters.

This sets the scene for an in-depth analysis of what factors are important to helping both households and communities build resilience in the expectation of a future disaster. The remainder of this chapter examines these two determinants of resilience in depth, first interrogating what factors enable households and communities to recover faster before examining the ways that they seek to reduce the impact of future disasters.

Research indicates that vulnerability of SIM households and villages has less to do with government services than it does with their own characteristics. In turn, this indicates that efforts to enable improved resilience must be focused as much on providing disadvantaged groups with a safety net as on enabling the village or region as a whole to develop.

Household resilience

Table 35 shows the capacity for recovery of the households in the 40 SIM villages by the factors ranked as important (i.e., '1') in Table 32 above within the first two years and nine years after Nargis (as well as social networks). By 2009–2010, the ability of households, regardless of affectedness to recover via migration and credit (even if expensive), is clear. At the same time, the challenges of being entrepreneurial

TABLE 34: Resilience of Villages by Degree of Affectedness, 2017

Affectedness	Resilient	Somewhat Resilient	Not Resilient	Total
Highly affected	0	5	7	12
Moderately affected	4	5	9	18
Lightly affected	2	1	7	10
Total	6	11	23	40

TABLE 35: Capacity of Households to Recover

Household Factors	1–2 Years after Nargis	9 Years after Nargis
Economic assets 1/	1–2–3	2
Local jobs opportunities	2	1
Migration	1	1
Remittances	2	1
Credit	1	1
Entrepreneurial spirit	3	2
Management of household resources	2	1
Number of working family members	3	1
Good health	2	1
Social networks	2	2

Note: The codes are: “1” enough capacity for recovery; “2” some capacity for recovery; “3” little capacity for recovery.

1/ Indicates differences by degree of affectedness 1–2 years after Nargis (lightly, moderately, highly, respectively).

in the aftermath of a disaster and the lack of enough working family members to assist in rebuilding livelihoods were evident challenges. In addition, there is a range of factors where households faced significant constraints in their ability to recover.

Unsurprisingly, the main difference across levels of affectedness is the level to which households could rely on existing economic assets. In lightly affected villages, households had a higher level of capacity when it came to using their existing economic assets for recovery, while the villages more badly affected by Nargis had seen most of their assets destroyed and could not count on them to aid in recovery. Furthermore, revisiting the data on aid at the time of SIM 3²⁷ indicates that the aid provided tended not to be the one that, with hindsight, helped most households in their recovery.

By 2017, households continue to draw on migration (especially to Yangon), remittances, and access to (more affordable) credit. In addition, local job opportunities also strengthen their resilience capacity, as do better health of family members, a larger number of working family members, and a greater ability to manage household resources. At the same time, households still do not command a strong entrepreneurial spirit, and their access to economic assets remains more limited, which weakens their capacity to recover. Moreover, they face an important deficit in social networks—all important entry points for future aid.

²⁷ Tripartite Core Group. 2010. Post-Nargis Social Impacts Monitoring, April 2010; page 6, Figure 1.

TABLE 36: Capacity of Communities to Recover by Factor

Community Factors	1–2 Years after Nargis	9 Years after Nargis
Diversified economic activities	2	1
Credit	1	1
Leadership	2	1
Group membership	2	3
Social networks	2	2
Joint infrastructure activities	2	3
Good quality infrastructure	2	2

Note: The codes are: “1” enough capacity for recovery; “2” some capacity for recovery; “3” little capacity for recovery.

Community resilience

Within the first two years of Nargis and across degrees of affectedness, there were few differences in communities’ capacity for recovery across the important factors identified in Table 33. As Table 36 indicates, villages tended to have some capacity for recovery with all factors, and credit was identified as the one where enough was accessible to enable recovery even if often at very high interest rates.

Nine years after Nargis, communities are more diversified economically and have stronger leadership. Availability of more (affordable) credit also remains an important asset. At the same time, despite numerous village projects, an infrastructure deficit still exists across the panel villages. Furthermore, communities demonstrate lower social resilience as both their capacity to undertake infrastructure activities jointly and their group membership have weakened over time, an unintended outcome of increased outmigration. As the SIM series indicates with regard to aid, emphasis on the “what”—diverse economic activities, good quality infrastructure—tended to overlook important “soft” factors of recovery, the “how”—leadership, social network support, and joint activities. The trend in Table 36 confirms, however, the importance for development assistance that aims to provide sustainable benefits to place particular emphasis on strengthening social relations.

Preparedness

The team also investigated the extent to which a SIM household or community can act to reduce the effects of a disaster. The ability to engage in such harm reduction is a reflection of two broad sets of actions. First, there are the actions taken by households and communities to recognize the potential ways to reduce the impact of a potential disaster. Second,

there are the specific steps that can be taken to reduce the effects of a disaster when it does occur through planning and preparation. Furthermore, resilience can emerge as the by-product of other socioeconomic decisions.

Throughout this analysis, care must be taken to recognize the distinctions between slow and rapid onset disasters. Over the previous nine years, SIM has focused on how communities have recovered in the aftermath of a rapid onset disaster such as Nargis. In 2017, however, while SIM villages are at a high risk of another rapid onset disaster, they also face an almost certain slow onset disaster in the form of climate change (see box below). The early chapters of this report have shown the effects climate change have had on Delta communities to date. This chapter includes an analysis of how SIM communities are working to reduce their vulnerability to this uncertain future.

Reducing exposure to disaster

One clear way to lessen the impact of a disaster is to reduce how exposed one is to it and its long-term effects. For example, the few Delta households that are able to buy and build a second home in the township are inherently more resilient to the effects of a rapid onset disaster because they face reduced exposure to being without shelter, thereby also reducing the risk that they might lose their lives in another cyclone.

Similar examples appear across thematic areas. Income diversification via new job opportunities available in the village reduces the disaster exposure of livelihoods for both slow and rapid onset challenges. Migration is an even more effective tool to reduce livelihood exposure as it largely removes a working adult's income from the ebbs and flows of the rural economy. Identifying where a household or community is exposed to disaster and taking action to limit it are the first components for reducing disaster impact.

Exposure reduction can also occur at the community level when steps are taken to reduce a village's risk of being affected by a natural disaster, such as removing trees that might fall, improving roadways and paths so they do not wash away, or constructing shelters and windbreaks.

Protecting from disaster effects

However, it is not possible to reduce exposure for all aspects of a households' existence. Paddy fields cannot be moved and villages are also (mostly) immobile. Physical assets such as cash, gold, harvested paddy, and food stocks are inherently at risk because of their location, and it is difficult for many households to move these goods or eliminate their exposure to a potential disaster.

Instead of exposure reduction, villagers have taken steps to protect such assets from the effects of a disaster. For

Climate Change—Observed Effects

Myanmar is one of the world's most vulnerable countries to climate change, with a coastline stretching more than 6,000 kilometers and a majority of its population living in areas deemed 'climate change exposed.' The Delta is one of Myanmar's most vulnerable regions, given its proximity to the ocean and cyclones, its low elevation, the reliance of its population on agricultural production, and its limited infrastructure. Beyond the destruction caused by Nargis, the Ayeyarwady Delta has experienced regular flooding, occasional droughts, pest infestations, and a wide variety of other weather and climate-linked challenges.

While the SIM report does not seek to offer a specific climate change diagnosis for the Delta, there are a number of observed changes that are linked to climate change. Though villagers themselves do not tend to have a strong understanding of what climate change is more broadly, they have a clear picture of how changes in weather patterns each year have become more noticeable, almost all having a detrimental effect on community livelihoods.

For farmers, the monsoon rains and their schedule, intensity, and duration are perhaps the most important indicators of livelihood outcomes. Across the SIM panel, farmers reported that the monsoon in recent years has become unpredictable in its timing, shorter in its duration, and more intense in its storms. Fighting their farmland's flooding and drought now occurs within months of each other. These changes have had negative effects on harvests and driven farmers to leave some land fallow, change crops, and seek alternative or supplementary income sources.

Fishers see different indicators but the result is the same: less predictable patterns of weather that have changed significantly in recent years. Winds from the south that accompanied the hilsa fishing season have been replaced by northerly breezes, and they have been accompanied by a decline in the size of fish that can be caught. Higher and more violent tides are common, with the fishing villages that dot the Myanmar coast and lie alongside the Delta's major rivers reporting regular flooding—something that prior to Nargis was an annual or even more infrequent occurrence.

physical assets, this has generally meant some sort of physical barrier. For instance, building an embankment or a sluice gate is a protection activity for both homes and paddy fields in expectation of a slow onset disaster, while burying food, water, and important items for post-disaster consumption is now a common protection step for a rapid onset disaster.

Planning and preparation

Identifying where exposure can be reduced or protection is needed is just the first step toward reducing the impact of a disaster. Action is then taken: both longer term planning for households and communities in the event of a disaster and immediate preparation steps when it becomes apparent that a rapid onset disaster is imminent.

This analysis of planning and preparation is differentiated between the household and the village level. While there is some overlap, households clearly operate as a more consolidated and tighter unit with more of a focus on the individual socio-economy compared to a village's focus on local infrastructure and social ties.

At the household level

Some of the steps taken by households to reduce the impact of a disaster vary by livelihood group, others vary by economic wealth, while others are consistent across villages. Many of the activities undertaken reflect an instinctual assessment on the part of villagers about their own ability to effect change and take steps to mitigate the effect of a disaster on their livelihood.

Concerned about slow onset climate change, for example, farmers advocate and work to improve or build embankments and sluice gates and higher paddy walls to better control water flow and mitigate flooding. Many farmers decided on using a harvester to harvest the crop faster so that it would not be standing for longer than necessary. Those who are able to do so have often taken to storing their harvested paddy in town where there is reduced flood risk. Farmers are also now more likely to plant more paddy seedlings than previously necessary in anticipation of the need to replant. But there are few steps farmers have been able to take that would effectively reduce exposure to pests or protect their crops from another Nargis.

At the same time, fishers, while unable to effectively address slower onset problems like water quality or increased pollution, have been able to take steps to reduce their own risk during rapid onset disasters. Fishers across the SIM panel reported being much more cautious about when they took their boats out, more aware of the weather forecasts and storm potential, and more likely to take steps to prevent their equipment from being damaged, like properly fastening nets to the riverbed with long bamboo sticks.

In some cases, fishers reported that they would scuttle their boats to protect them from a storm surge, refloating them after the storm had passed. During cyclone season, fishers watch the tides carefully and are much less likely to fish offshore.

Beyond livelihood-specific activities, households take a range of longer term steps to mitigate the effects of a bad storm, saving in gold or replanting trees in an effort to create a windbreak. Many households consider potential evacuation uses when contemplating whether to buy a car, motorcycle, or power boat, while others who can afford it, buy property in the nearest town.

In some villages, households have used the experience of Nargis and other post-Nargis storms to inform their house building decisions. In communities that experienced high levels of flooding, households build new homes further off the ground than previously, in some cases elevating their homes on stilts several meters above the ground. Other communities which experienced high winds but are situated away from waterways on higher elevations, build homes with a larger footprint that are closer to the ground. Across the sample villages, villagers have taken to strengthening their roof and fastening it better to the frame.

If a rapid onset disaster is identified as imminent, households take a range of preparatory steps. Most common and reported in almost all moderately and heavily affected villages is the packing and burying of food and water (and, potentially, valuables and important documents) in waterproof plastic bags or containers. In some villages where new, higher homes have been built specifically to withstand flooding, paddy and other important goods are stored in the eaves of the roof where flooding is unlikely to reach. In particularly vulnerable villages, households might visit relatives in town until the storm has passed.

At the village level

Villages take a range of steps to plan and prepare for disasters that include both risk reduction and prevention steps. While there are few formal plans and most are unwritten, most villages and village leaders, primarily in highly and moderately affected villages, reported both taking steps to reduce risk and planning actively for the potential of a new disaster.

One of the clearest risk reduction steps in SIM villages has been the planting and/or removal of specific groups of trees in the years following Nargis. Almost half of all villages have taken steps in recent years to reduce the threat of damage caused by trees during storms. Fourteen villages reported that they had worked together as a village to plant more trees in an effort to block high winds that had damaged or destroyed homes in the community. Villagers also reported that larger trees are some of the only things that were not

washed away in the storm. A further four villages had taken steps to cut down trees around the village, as homes had been destroyed in previous storms when the trees were blown down.

As with the changes to house construction, this reflects communities taking the experiences of previous storms and doing their best to respond to them. However, it should be noted that these measures have been taken within villages; there were no indications that any communities had replanted mangroves or even viewed mangroves as useful for flood or storm surge reduction. While in a small number of SIM villages, NGOs have tried to emphasize mangrove restoration via cash-for-work or nursery garden programs, communities have not shown an interest in pursuing these independent of externally driven activities.

Most villages now have designated shelter areas, reflecting a focus on community infrastructure improvement despite the continued absence of formal cyclone shelters. Nine years after Nargis, very few SIM villages have purpose-built cyclone shelters, and they are not high on villagers' priority list for self-help given the wide variety of other needs and high costs. However, villages do tend to have a designated structure(s) where the community plans to take shelter during bad storms. The most common shelters were monasteries but other structures, including community centers and schools, are also used for this purpose. These designated areas have been the focus of ongoing collaborate village efforts to maintain and improve them, to ensure they are secure and effective shelters when needed. In some of the SIM panel's most vulnerable villages, a collective evacuation plan to go to town was created. Villagers often also came together to build stronger jetties that could withstand storm surges.

Communities are more focused on awareness as a key link between planning for possible disasters and preparing for oncoming storms or other shocks. Radio, and more recently satellite television, are now used to get up-to-date weather forecasts. For fishers, especially, these bulletins determine their livelihood activities, as they will no longer take their boats out if a storm is expected.

The ubiquity in 2017 of mobile devices and 3G has meant that information delivered via social media has rapidly become one of the most important tools for village preparedness. Nationally known meteorologist U Tun Lwin is a favorite and his Facebook page is closely followed across Myanmar. His name was mentioned several times by respondents in different parts of the Delta.

"We look at the Facebook page of U Tun Lwin if we want to know news about the weather."

—Member of a disaster risk reduction committee

"I have added U Tun Lwin on my Facebook page and always follow him."

—Fisher

Village leadership

Village leaders play an important role in the planning and preparation for potential disasters. In some villages with an active leader involved in disaster preparedness, s/he keeps a list of vulnerable people in the village, including the elderly, children, and disabled. These same leaders often determine food contributed by the village that is kept at a central community building (often the monastery), make arrangements for the wealthier villagers to contribute to local preparedness activities, and make advance plans for villagers who need shelter in town during a storm. The VTA is also responsible for informing the township administration when a flood or other disaster occurs in the tract and for passing information, including on the weather, from the township to other villagers, generally by use of a loudspeaker.

Local collective action or activities by NGOs to encourage disaster risk reduction (DRR) has been relatively stagnant over the past four years, with DRR committees now either absent or inactive in most villages. There are DRR committees in only four villages, with several other villagers reporting their DRR committees had gone defunct in recent years. By contrast, 17 DRR committees were reported in SIM 2. (In SIM 1, no villages had DRR committees but 27 had formed emergency committees to manage post-Nargis relief activities.) The most common reason for such committees to cease activities was that it has been over nine years since Nargis and no bad storm had come so there was considered to be less need. Migration has also played a role: DRR committees were often run by the younger generation, many of whom have since left the village.

"There have been no big events, shocks or disasters after Nargis. DRR committees have gradually disappeared."

—Member of a DRR committee

For those DRR committees that remain, their normal activities are to provide demonstration exercises every six months of what to do in the event of a disaster, spread information about expected storms and cyclones to everyone in the village, and ensure all households (especially the vulnerable ones) know what to do in the event of a storm—what to store, and where to go. They also play a coordinating role between the local fire brigade, youth, and Red Cross committees (where these exist) so that everyone knows their responsibility in a storm. In one village, a particularly active DRR committee has a system of flags based on different storm severities that are raised so that all in the village can see the alert level.

Resilience as a by-product

Not all steps taken by villagers and communities that reduce exposure or improve protection are taken with the specific goal of resilience in mind. In fact, often it is some other goal that motivates people, and any improved ability to reduce the impact of a disaster is secondary, a by-product of this goal. Of course, this is not a binary decision; activities lie along a spectrum with actions undertaken by households purely focused on resilience (building a new home higher off the ground), some fully focused on socioeconomic improvements (buying a motorcycle to start a new taxi business but also allowing the household to rapidly evacuate if necessary), while others emerge from mixed motivations (improving paddy field drainage).

Migration to Yangon and the purchase of land and houses by migrants are likely the most important examples of socioeconomic decisions that have massive positive effects on households' ability to reduce disaster impacts on the Delta. Buying a home in town has a similar impact: in one case,

for example, a farmer bought a house in town to provide his children a place to live while at school, but when the village flooded, the house offered a place for the entire family to live while repairs were being made.

While these are large-scale investments, there are other examples available to more households where the by-product of a decision or economic activity is improved household resilience. Examples from the SIM research include the motorcycle taxi used for evacuation, building a new home out of concrete because of the increase in wood prices resulting in improved home sturdiness, and the purchase of a satellite dish for entertainment that is now used to view weather forecasts and improve information awareness.

The by-product of resilience also exists at the community level. For example, efforts to develop roads and bridges that improve a village's connectivity to town by motorcycle or car allow for much faster evacuation if villagers are forced to flee a storm.

8

Implications for Future Aid

For Future Post-Disaster Aid

In the aftermath of Nargis, aid²⁸ delivery saved lives and then sought to rebuild lives. It first provided affected communities with immediate necessities of food, water, and shelter and then, as the region began to rebuild, with the tools to rebuild homes, communities, and livelihoods. Early aid providers were almost entirely local, though the response grew and eventually helped lay the groundwork for international donors and aid agencies to assist Myanmar more broadly.

The experience of villages across the SIM panel over the nine years since Cyclone Nargis demonstrates both the strengths of post-disaster aid and some of the challenges such assistance has in helping households and communities rebuild their lives and livelihoods. On the basis of five rounds of social impacts monitoring, the following considerations have become clear.

Aid is not apolitical and can have lasting effects on the social relations of a community

The experience of aid across the SIM panel was generally a positive one, and no one village looked back in anger at

²⁸ For the purposes of SIM, 'aid' refers to all types of aid received, both cash and in-kind and across multiple sectors. All types of aid providers from outside villages, such as government, local and international NGOs, United Nations agencies, private sector aid providers, and religious groups, are referred to in the SIM series as 'aid providers', as villagers themselves did not tend to distinguish among different kinds of sources of assistance.

the delivery of aid. But aid is not unproblematic, particularly when it comes to distribution and what groups receive what aid. SIM 4 highlighted the need for proper targeting and the need to design aid responses that meet the needs of the affected groups. Four years on, the same lessons can be drawn, with the additional point that outside assistance can have both longer term positive and negative social effects.

Throughout this report, it is clear that women's role in village social affairs has expanded. The drivers behind this change are varied and their interplay complex, but a recurring theme heard by researchers from respondents was that aid programs that required women be involved in community-level, decision-making bodies were an important component. Whether quotas within larger committees, women-only bodies, or some other model, involving women in decision making both gave them the tools and confidence to put themselves forward and helped socialize men to the idea of formal female leadership and women's voices being heard in social affairs, previously a rare occurrence in Myanmar village life.

However, there have been negative social effects as well. Aid delivery worsened relations between religious groups and led to splits within Christian and Buddhist, and Muslim and Buddhist villages that persist to this day. Trust in the other religious group was undercut due to aid and, with that mistrust strengthened by broader forces around religious nationalist and ethnic identity across Myanmar, these divides have remained. Taking such local dynamics into account will be of paramount importance for any future post-disaster aid effort.

The long-term trajectory of aid and its role in livelihood development should be considered as soon as practically possible

The provision of immediate, life-sustaining aid must clearly be the primary concern of any aid response to a disaster. At the same, transparency, accountability, and participation ought to be central features of aid even at this stage. Then, as soon as is practical, aid providers should work to develop a longer term strategy for rebuilding the livelihoods of affected populations and enabling new economic opportunities for those whose livelihoods are irrevocably altered. Without a strategy, aid risks becoming irrelevant or misapplied as the context within which it is being offered is changing.

Over the lifetime of the SIM series, the core Delta livelihoods of farming, fishing, and agricultural labor have ebbed and flowed. New equipment has allowed fishing boats to go further afield, and better quality seed and market access improved farmers' returns per acre. But these livelihoods face systemic threats of climate change and labor shortages that will limit their role as both pillars of income and employment for the Delta population. Post-disaster aid that seeks to rebuild a shattered socio-economy cannot afford to ignore the trajectories of these livelihoods and must anticipate and adapt to the changing shape of Myanmar's rural, rice producing economies.

Disasters alter the social fabric of communities and may lead to a permanent reordering of community life

Aid must ensure it grapples with these broader changes rather than seeking to rebuild a society that is no longer there. The clearest disruption to the social fabric has been the massive migration outflow from the Delta to Yangon and beyond that has left many villages with few young people to take on either their parents' livelihoods or carry on village social life.

While this is not unique to the Delta (and is not uncommon in a rapidly urbanizing world), it is a continued challenge for SIM communities, many of which already lost one generation of village elders when Nargis struck. As migration continues and village populations continue to age and shrink, aid providers in the Delta will start to face slowly disappearing villages, an issue that will require concerted and focused attention.

For Future Development Assistance to the Delta

The Ayeyarwady Delta has in many ways recovered from the most obvious effects of Nargis. Houses and much village infrastructure have been rebuilt or improved, most paddy fields are planted each year (sometimes twice), and markets and new roads bustle with increased traffic. But the region has changed irrevocably as a result of both Nargis and Myanmar's broader political and economic transition. The Delta's economy is already beginning to move away from labor intensive farming and fishing methods even as village social structures work to adapt to a new reality where village populations are smaller with far fewer young people to maintain traditions.

As development actors look to develop longer term sustainable programming, the Delta's current context is instructive and provides lessons for the national government, donors, and implementation agencies alike.

Climate change adaptation and mitigation

As discussed above, climate change must be recognized by all actors working in the Ayeyarwady Delta as perhaps the most powerful force affecting livelihoods and social change. Programs that fail to take into account the roles of unpredictable weather conditions, varied monsoon periods, dry season droughts, increased storm frequency, and higher sea levels will fail to deliver positive and sustainable results to the communities they work with. There are a number of key lessons to be learnt from the experience of SIM villages in recent years, particularly around disaster preparedness, embankments, and the role of locally driven development.

Disaster preparedness

In the years immediately following Nargis, disaster preparedness was seen as an important household and community activity across many SIM villages, not just those that had been highly affected. In the tenth year after the disaster, the memories of Nargis have faded somewhat, and despite regular flooding and the experience of smaller cyclones in the past several years, the urgency to spend significant time and money preparing for disasters is gone from all but the villages worst affected by Nargis. Initiatives such as DRR committees have disappeared as donors have moved on, and most communities would rather invest in religious buildings or paddy storage facilities than a purpose-built cyclone shelter.

Preparing for a future disaster can seem to lack clear benefits, and programs on how to survive or withstand a storm can seem immaterial to a farmer who is struggling to deal with drought-induced pests. But the experiences of households across the SIM panel show that those who were prepared; who knew to store rice, water, oil, and documents; who knew to evacuate from their vulnerable village; and who had access to radio warnings fared better than those who did not. Continuing to ensure Delta communities are as prepared as possible for a future disaster must be a focus of government and donors alike by continuing to invest in the DRR mechanisms that were first set up in the wake of Nargis.

Embankments

In the coming years, it is a question of when rather than if the Delta will experience major flooding, and planning by development actors should account for this uncertain future. SIM 5 research made clear that one of the most important indicators of a village's agricultural outcomes was the presence of embankments protecting at least paddy fields (if not the entire village) from the damaging effects of flooding and salt water intrusion.

Well-built embankments are time- and labor-consuming to build and beyond the financial capacities of most local self-help groups, though some have tried. The need for embankments in the Delta is not a new finding—some of the existing ones were constructed decades ago by the government with World Bank funding. A program to provide embankments across the Delta would serve multiple purposes, from improving agricultural returns, to providing a new livelihood for landless laborers, to enhancing DRR.

Community driven development/ Evergreen-type interventions

Beyond a few large-scale challenges, such as embankments, the development needs of communities across the Delta tend to be local, and communities are best placed to identify and design programs to address them. In recent years, the expansion of the government's Evergreen program, the Livelihoods and Food Security Trust Fund, and the World Bank-financed National Community Driven Development Program have sought to enable local solutions to local challenges of credit access and community infrastructure.

While neither program is a panacea, there remains significant scope for financing community-level efforts to identify and address local challenges. Many of the persistent challenges identified by communities regarding local infrastructure, access to finance, and livelihood diversification could be at least partially addressed by such programs. In so doing, they would reduce many of the vulnerabilities Delta villages continue to suffer from.

The momentum that these programs have created can and should be used to make community-based disaster risk management (CBDRM) a standard feature of any local level project. Disaster impacts can erode or reverse the hard-won achievements of participatory development in improving the situation of poor communities, including the diversion of scarce developmental resources to support disaster responses. A CBDRM perspective can be included in operations in multiple ways, for instance: building awareness and support for disaster risk management and climate change adaptation during the social preparatory stage and other key junctures of the project cycle; pursuing a broader policy dialogue regarding ways to strengthen the linkages between village development planning and township level planning; and creating project implementation partnerships with NGOs/ and civil society organizations engaged in community-based disaster risk management.²⁹

Livelihood development

Trainings for farmers

Agricultural extension services are an important tool to improving agricultural returns. While better access to improved inputs is an important step that many farmers in the Delta now have, their ability to take full advantage of the potential increases in return is limited by a lack of access to knowledge about alternative farming methods.

To date, extensions services, especially trainings, across the SIM panel have been both infrequent and the exclusive domain of NGO providers. Expanding farmer access to information on best practices with regard to new fertilizers, soil quality tests, and other extensions services is an important step toward sustainable agriculture development, particularly in a context where labor is less available and farmers are beginning to turn to pesticides and fertilizers as cost-saving alternatives. Without training, use of these chemical inputs can have negative effects on agricultural outcomes, on the local environment, and the quality of the crop itself.

Justice for fishers

Fishers across the SIM panel expressed frustration at what they see as an unequal playing field. After the first year after Nargis, their livelihood has received less support compared to farming,³⁰ even as the regulatory and competitive landscape of fishing has become harder in recent years. The

²⁹ World Bank. 2018. *Integrating Community-Based Disaster Risk Management into Myanmar's National Community-Driven Development Program: Guidance Note*. Draft.

³⁰ Tripartite Core Group. 2010. Op. cit.

regulatory context for village-level fishers is complex and appears to vary from township to township and year on year. Small fishers often suffer the negative externalities (loss of nets, loss of fishing territory) of larger scale fishing operations. Further, illegal but commonplace fishing techniques

including poison, explosives, and electric shock both harm the environment and hamper those fishers who attempt to fish legally. Greater efforts by both government and development actors to create a fair playing field for village-level fishers are required.

9

Post-Disaster Social Impacts in the Literature

While considerable research has been undertaken on community resilience to natural disasters more broadly, the literature on the long-term social impacts of a natural disaster is limited.³¹ Various aspects have been researched, for instance, in Peru after the 1970 Ancash earthquake, in Sri Lanka after the 2004 Indian Ocean tsunami, and in New Orleans after Hurricane Katrina in 2005. Few longitudinal studies have been undertaken, and those followed communities and households for relatively short periods of a few years only. As a longitudinal study over nine years in a panel of disaster-affected villages the Post-Nargis Social Impacts Monitoring is an important contribution to the field.

Disagreement remains about the long-term economic and social consequences of natural disasters. This is not surprising since every disaster is different, affects individuals and communities in different ways, and is followed by a different recovery response. Not surprisingly, therefore, many of the SIM findings are reflected in the literature, while others offer new insights. This section summarizes the most salient findings of SIM in relation to key aspects of post-disaster impact and recovery identified in the literature.

Recovery as a continuous process

The literature points out consistently that recovery is an ongoing process that unfolds over time and can continue

until the next event. The longer recovery takes, the stronger the impacts of indirect effects of the original event and/or new hazards and developments. The literature also distinguishes between recovery of individuals and recovery of communities and notes that vulnerability to disaster impacts is dynamic and shaped by interconnected shocks and stresses.

SIM clearly demonstrates that recovery is a dynamic process that evolves over time in response to a myriad of external influences subsequent to the initial disaster. Every new round of SIM identified a new trajectory due to changes in the environment that could not have been foreseen at the time. For instance, two years after Nargis, laborers found themselves in the direst predicament, yet seven years later they were overall the most recovered livelihood group.

Though difficult to distinguish in detail, it is also evident that higher order losses, those caused by impacts that were themselves caused by the direct effects of Nargis, have cast a long shadow on the recovery of villages in the Delta. Had Nargis not happened, villagers would have been better able to cope with subsequent natural events. The SIM findings over time confirm the original hypothesis, namely that continued monitoring of the socioeconomic activities and social relations is critical to devising recovery (and later development) assistance that meets the prevailing yet changing needs of the disaster-affected population.

Deepening poverty and structural changes in the local economy

The literature provides multiple examples of countries where poor individuals, communities, and regions have been confronted with a permanent decline in incomes as a result of exposure to a natural disaster. Population movements,

³¹ See, for instance, Martin-Breen, Patrick, and J. Marty Anderies. 2011. *Resilience: A Literature Review*. The Rockefeller Foundation; Burton, Cynthia. 2014. *Social Risk in Post-Disaster Contexts: Guidance Note*. The World Bank; Noy, Ilan, and William duPont IV. 2016. *The Long-Term Consequences of Natural Disasters—A Summary of the Literature*. SEF Working paper 02/2016. Victoria University of Wellington; and World Bank. 2018. *Community Resilience and Social Impacts of Natural Disasters: An Annotated Select Bibliography*.

declines in income and asset prices, and apparent permanent shifts in sectors of economic activity are amongst the most prevalent manifestations.

SIM findings confirm these observations on two levels. First, even in villages that are considered recovered, there are households that had been poor or near-poor prior to Nargis and have found themselves in destitution ever since. Others became poor as a result of the cyclone. In terms of post-disaster assistance, this puts a premium on targeting, and again underlines the usefulness of SIM to track household status over time in a participatory manner.

Second, there have been strong and continuous shifts in economic activity ever since Nargis across all livelihood groups, and in multiple directions. Farmers would become fishers, fishers laborers, and laborers farmers. Nargis has also had an important impact on population movements. Outmigration has been a critical coping mechanism throughout the recovery period, later significantly amplified by Yangon's strong economic growth that started several years after the disaster.

The importance of social capital

The literature assigns social capital a critical role in the recovery process, with some arguing that it serves as the core engine of recovery. Communities with strong social capital are seen as recovering more quickly than those with weaker social ties. Social cohesion can increase after a disaster, at least temporarily, as a community works together to face the aftermath.

Important attributes of communities with strong social capital include high levels of trust (in community members as well as government officials), participation in social events, and the ability to mobilize collectively. Households with strong ties to family and friends also recover faster as they may receive more support in the form of, for example, shelter, transport, or tools. Moreover, the literature notes that social capital can be strengthened or weakened after a disaster depending on how well aid interventions are designed and/or implemented.

SIM confirms the importance of social capital for the recovery of panel villages, though perhaps not to the extent of being the “core engine of recovery.” Significant cooperation helped those villages with strong social capital get by in the first years after Nargis. Throughout the SIM period, moreover, community members have cooperated economically both within and across villages. And, those villages that suffered from poorly targeted aid, or aid targeted to a specific social group, had lower social capital, which impacted recovery negatively.

The long-term trend that SIM found, however, indicates that while social relations within and between villages are still good a decade after Nargis, they are less strong than they used to be. A more individualistic way has emerged which became quite pronounced five years after the cyclone, when many families could no longer afford to attend community social events. The increase in outmigration that followed the start of the economic transition in Myanmar has amplified this trend.

The central role of local leadership

Numerous studies attest to the important role that leadership plays for recovery. Local leaders, whether formal or informal, have been shown to be more effective when they are able to harness a community's social capital in the recovery process, and facilitate collaborative decision making. Leadership is easier when social capital is strong, and good leaders make social capital stronger. The challenge on local leaders is two-fold. First, they need to be accountable to and earn the trust of community members to mobilize them for collective action. Second, they need to develop a strong relationship with outside actors—higher levels of government and aid providers—to gain resources for recovery.

SIM confirms the central place of local leadership in the recovery process. Over time, good leadership combined with increasing outmigration have been the central determinants of whether or not a village recovered. At the same time, SIM offers a unique window into how the political transition process that started in 2011 has played out at the village level. Immediately following Nargis, the ability of formal, government-appointed leaders and informal leaders (especially religious leaders and respected individuals) to work together helped during the critical relief and early recovery phase. SIM has also demonstrated that the roles of leaders, and the types of leaders, change over time.

Elections of local leaders, as of 2013, disempowered village leaders in favor of village tract leaders. However, good relations between them facilitated recovery. Interestingly, villagers considered English language skills important for local leaders, as this would enable them to engage more effectively with external aid providers. SIM also confirmed that good relations of local leaders with township leaders helped mobilize additional resources for their communities.

A gendered perspective

The literature abounds with examples of post-disaster aid not being sufficiently gender sensitive. Due to socio-economic conditions, cultural beliefs, and traditional practices, disaster impacts are often not distributed uniformly within

a population. Gender differences are frequently most telling in the aftermath of a disaster, and as in most cases, the mortality rates for women are higher than those of men. Moreover, post-disaster relief and recovery tend to be dominated by men, which time and again leads to a strong male bias to the detriment of women's needs and livelihood concerns. In addition, women face entrenched societal barriers to participation: they are often poorly represented in decision making and in project planning, implementation, and monitoring. As a result, women's voices and concerns tend to be less heard, and their different and specific needs remain repeatedly unaddressed.

In broad terms, SIM finds that the post-Nargis response is no exception to this general male bias. Women suffered more heavily from Nargis, accounting for 61 percent of the people who died that night (with the number much higher in some villages).³² Those who survived had to carry the additional burden of lost male family members which, given rural Myanmar's traditional distribution of intra-household roles, arguably put a greater strain on them as compared to surviving widowers (who could also remarry more easily). The post-disaster relief and recovery aid had only limited specific support for women, though clearly a range of activities benefited them as much as or more than men, for instance in water and sanitation. The most important specifically targeted activity SIM researchers found was the establishment of microcredit funds for women-only groups. By contrast, especially external aid providers placed important emphasis on including women in the decision-making process. This approach eventually contributed to a broader recognition of the role of women in leadership positions.

Aid and its perils

The literature indicates that aid reduces the impact of a natural disaster. A higher amount of aid does not necessarily reflect greater affectedness, however. Evidence from Sri Lanka, for instance, suggests that the districts that benefited the most from aid were those that were perceived as tsunami affected (and therefore received assistance) but were less heavily damaged. Further to this, disaster relief and recovery efforts may sometimes generate new risks instead of facilitating the conditions required to build longer term social resilience—by setting up parallel delivery mechanisms in the absence of state measures or bypassing local communities and community groups in decision making.

Moreover, the “how” and “what” of aid are often seen as equally, if not more important than the “how much.” Community involvement in beneficiary selection and verification

systems has been identified as a key element in reducing social tensions. By way of example, if the process of beneficiary identification is seen to be equitable and impartial, communities develop a sense of ownership over the aid received and become more engaged in the recovery and reconstruction process. In terms of the “what,” for example, an oversupply of fishing boats in Aceh after the 2004 tsunami put added pressure on fish stocks that had been declining prior to the disaster and increased preexisting vulnerabilities.

The post-Nargis response reflects many of these findings. Aid was important for the recovery process, and on the whole, recovery has been stronger in villages that received more aid. However, the level of aid did not correlate well with the degree of affectedness, and many highly affected villages received less aid than some of the less affected ones. SIM pointed out that external aid providers often chose to bypass formal leaders due to their association with the State and Peace Development Council, an approach that contributed to a long-lasting deterioration of community social relations in several villages.

Aid after Nargis was more often than not provided in a top-down manner where aid providers identified the priorities and beneficiaries. On the one hand, this led to an imbalance in the recovery process. An overemphasis on the provision of fishing boats to the detriment of farming inputs in the first year after the disaster contributed directly to the sharp decline of the fishing sector over time. Moreover, in the rush to provide support immediately after the cyclone, providers distributed aid that was ill suited to the Ayeyarwady Delta's climate and ecology, including with regard to shelter and farming inputs.

On the other hand, villagers or their leaders were frequently not included in the identification of beneficiaries and the distribution of aid. In the best of circumstances, villagers mobilized to redirect the assistance according to their own identified needs—with or without the agreement of the aid provider. In the worst of cases, poorly targeted aid facilitated corruption and weakened the community's social capital. These findings stress the importance of institutional learning on the part of aid providers in post-disaster situations.

Furthermore, previous SIM reports pointed to a lack of ‘systems’ or sector-level approaches to livelihood recovery. Instead, the focus was largely on short-term needs. In the case of fishing, for instance, SIM found that support to small-scale fishers who had lost their boats overlooked the vital role that middlemen, who had been directly and indirectly impacted by Nargis, were playing for the proper functioning of the local fishing sector. This also meant that recovery aid did not aim to address structural constraints and policies governing development in the Delta. For formal credit, the policy environment has become more enabling

³² Tripartite Core Group. 2008. Post-Nargis Joint Assessment, page 26.

over time, as SIM 5 attests. Conversely, for fishing licenses, the situation nine years after Nargis is arguably worse than it had been before the cyclone. This confirms the importance of policy-level engagement already in the immediate post-disaster period, which in turn needs to be grounded in a deep understanding of context.

Disasters, debt, and land

An established finding in the literature is that demand by households for loans increases after a disaster. Poorer households are under greater pressure to borrow for daily purchases, housing construction, and to procure other goods. As natural disasters can significantly impact household income, a household's ability to repay loans is diminished, and household debt increases. This is compounded by the fact that poorer households often lack access to formal credit and have to take out loans from informal lenders at much higher interest rates. At the same time, households that are credit constrained for want of collateral find themselves in a direr predicament still. Oftentimes, those with land are forced to sell it, and at a lower price if the earning potential from land is affected by the disaster. More unequal land distribution may ensue.

SIM findings are consistent with all these experiences. The debt burden of all livelihoods groups increased significantly as a result of Nargis and a constrained aid effort. As Nargis broke the debt-harvest-repay cycle, the majority of households were unable to repay pre-Nargis debts, with many ending up in a vicious debt cycle. Until the opening of the credit market in the Delta several years after the disaster, households had to pay usurious interest rates of up to 50 percent per month. In particular, until out-migration opened a much-needed escape route from poverty for landless laborers, their ability to take out loans was constrained by their lack of creditworthiness.

In the long run, small farmers, the mainstay of the Delta economy, were impacted by Nargis and subsequent events the most, a fact reflected in the number of villages experiencing formal and informal land transactions. As expected, the price of land has depended largely on location; land that lies outside an embankment and is frequently flooded hails a lower price than land located near a highway connecting towns. Though difficult to quantify, not least since the land tenure system changed significantly with the introduction of the Farmland Law enacted in 2012, land ownership has become more unequal in several villages by SIM 4, with a smaller proportion of households owning their own farms. However, larger landowners have also lost land over the past decade, which has in turn reduced the disparity in farm sizes within a given village.

Migration

Diversification by the poor of their income through migration is a common phenomenon in post-disaster contexts. Research amply shows that remittances after a disaster play an important part in a household's ability to recover. No clear pattern has been observed as to how many households migrate, whether *en masse* or only select household members. Post-disaster migration can alter gender roles in the affected communities as well, with women more involved in paid work outside the home and community than before the event.

The importance of migration to the Delta economy after Nargis cannot be overemphasized. Despite restrictions on migration during the time of the military regime, household members migrated to Yangon after the cyclone in search of work. This migration, and the remittances it brought, helped those who stayed behind to recover. The massive expansion of migration over the past few years, however, has led to a quantum change that has had a fundamental impact on the local economy: higher disposable income for migrant households and less exposure to income variation due to other external events.

Disasters and vulnerability

The literature reveals that those who are already poor and socially vulnerable, or who have not yet recovered from a previous disaster, are at a higher risk, as they are more likely to lack adequate resources to buffer them against hazard impacts. Furthermore, poor people are often exposed to frequent, low-intensity events, such as the recurrent floods. In this sense, disasters not only increase the short-term economic and social vulnerability of the poor, but also erode their ability to cope with future shocks.

Vulnerability is seen as the ability of an exposed population to withstand a hazard and reduce its social, economic, and personal impacts. Location is a critical determinant of vulnerability, as is the quality of the built environment, including infrastructure and housing. Communities reliant on a single economic sector for their livelihood are more vulnerable than those with more diversified economies. Additionally, inequality as well as social marginalization increase household and community vulnerability, including through limited access to information.

SIM suggests that Delta villages remain vulnerable to future potential disasters, though to a somewhat lesser degree than before Nargis. The Delta is highly exposed to the risk of cyclones. At the same time, the infrastructure has improved markedly over the years, especially with regard to housing,

transport, and telecommunications. The Delta economy relies more than in the past on farming, because the fishing sector suffered from long-term decline. And yet, out-migration has offered important opportunities for employment that lessen the exposure in terms of income. Another critical feature reducing vulnerability today is easy access to information, in particular with more trusted and more frequently accessed weather information.

Resilience

In hazards research, resilience incorporates the capacity to reduce or avoid losses, contains the effects of disasters, and recovers with minimal disruptions. Communities and people who are more resilient are better able to cope with and recover from the consequences of disasters that cannot be avoided. Factors that are generally agreed to enable resilience include asset ownership, quality infrastructure, community evacuation plans, local knowledge, improvements in communications, social cohesion and community leadership, and connectedness to social networks outside of the community.

The literature also underlines that the resilience of a community is not static, as communities are complex and dynamic social structures. Awareness of a community's history and the ability to learn from successes and failures of the past are other important ingredients of resilience. And, the larger the number of resilient households within the community is, the more resilient is the community.

Overall, SIM 5 paints a somber picture of the Delta's disaster resilience. Only a minority of villages may be able to withstand another major cyclone. Even lightly affected villages are in their majority not adequately prepared. Location is the primary factor, but the missing translation of awareness into (collective) action is an important other one. Social learning from Nargis has not taken place to the extent needed. Disaster committees and evacuation plans remain in only a few villages, and in lightly affected villages, many villagers do not even see the need to invest in resilience. Individual households and communities do undertake some

preparatory activities, such as improving housing quality, storing documents safely, or replanting trees. Social links to towns and Yangon also provide a safety net. But these are not sufficient for area-wide resilience. More disconcertingly still, the actual and potential impacts of climate change are poorly understood, and not yet acted upon in a comprehensive manner.

Community-based disaster risk management

The literature indicates that the less prepared people and institutions are for natural disasters, the more devastating their impact will be. As a result, in many post-disaster situations, aid providers aim to strengthen community capacity to plan and prepare for a possible future disaster. Often times, this is achieved through the establishment of disaster risk reduction committees. However, the international experience also suggests that the memories of many disaster-affected communities fade with time. Consequently, unless preparedness systems are linked to government, especially local government, with regular resourcing and periodic simulations led or coordinated by relevant responsible agencies, they often disappear.

Following Nargis, NGOs undertook a significant number of community-based disaster risk management activities centered around the establishment of DRR committees. Extensive training was offered to its members, and where feasible, accompanying infrastructure built (especially storm shelters). Over time, the experience of the SIM villages mirrored those of similar efforts in other countries. Since no major storm hit the area since Nargis, the recognition of this constant threat has waned. More social learning has taken place in highly and moderately affected villages and yet, in only about 10 percent of these villages have DRR committees survived for a decade (and without external funding for many years). At the same time, aid providers have not linked their post-Nargis DRR efforts to local and national government structures. As a result, most of the investments in preparedness have been lost.



10

Final Reflections

What would village life in the Delta be like today had Nargis not happened? It is not possible to offer an accurate answer to this question for a variety of reasons.

- First, up until recently, data (and data quality) in Myanmar, whether quantitative or qualitative, were very limited—and even more so from the township level down. The eight townships in the Ayeyarwady Delta most affected by Nargis were no exception. Consequently, no reliable baseline data existed that could be used to compare the before and after situations.
- Second, while the initial sampling aimed to include four unaffected control villages, it became apparent during SIM 1 research that these had been struck by Nargis as well.³³ SIM data thus do not allow for a comparison between villages affected and those not affected by the cyclone.
- Third, the political and economic transformations that started in 2012 affected the entire country. As SIM 5 shows, these transformations have had wide-ranging effects on villages in the Delta—and in the rest of the country.
- Fourth, climate change effects have become prevalent and visible over time. On the one hand, these have started to overshadow the direct effects of Nargis. On the other hand, these effects are also not limited to villages affected by the cyclone.

Consequently, even with a baseline and control villages, a counterfactual scenario could not have been established as of SIM 4, which was undertaken in 2013 and by which time

³³ Access restrictions at the time of SIM 1 preparation did not allow preliminary field visits before identifying the sample villages.

climate change and the dual transformation in the country have already had a noticeable impact. This does not mean, however, that long-term trends and patterns of Nargis' direct and indirect effects could not be discerned. For this it is important to understand the level of development of the Ayeyarwady Delta compared to the rest of the country.

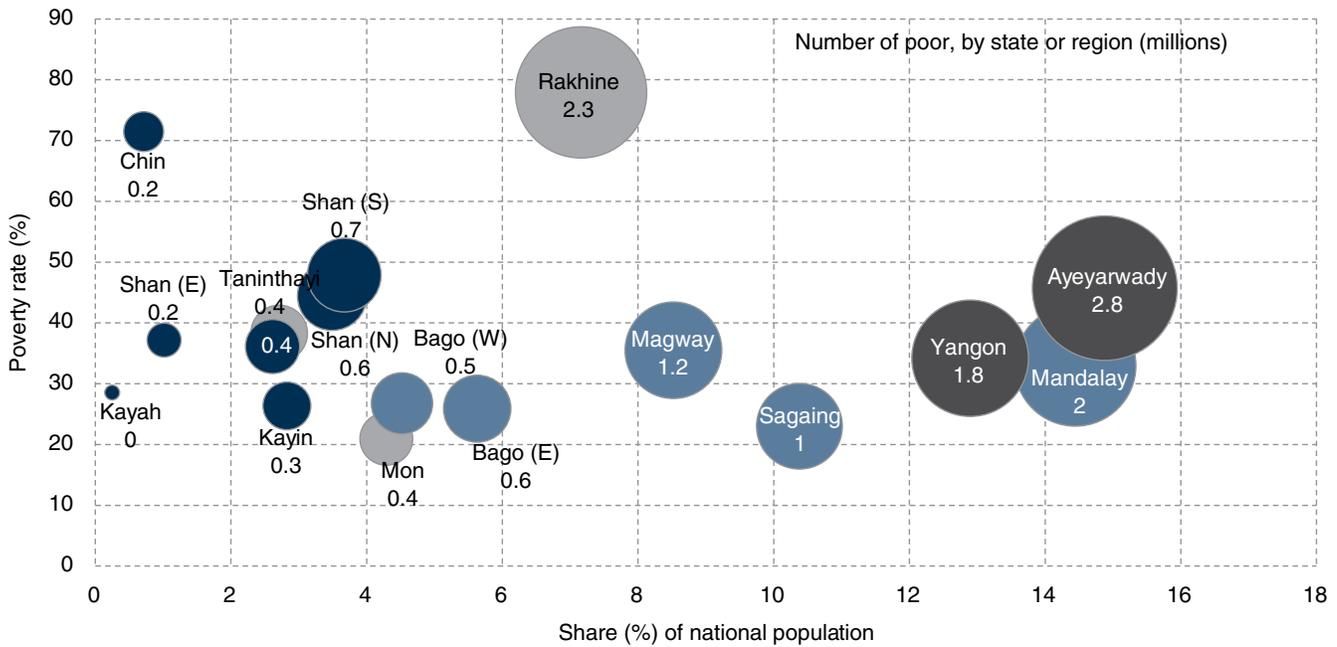
Structural poverty

Despite being the rice bowl of Myanmar, the Ayeyarwady Delta has been one of the poorest areas of the country. Ayeyarwady region is amongst the most populous regions/states, with an estimated 6.2 million residents.³⁴ It has the third highest poverty rate in Myanmar, tied with Shan state; the latest state/region level estimates from 2009/10 place poverty in the region at 45 percent, implying that nearly one in two individuals in the region could be considered poor (Figure 6).³⁵ Given the substantial population density of the area, Ayeyarwady region is home to nearly one in five of Myanmar's poor—18 percent of the poor were estimated to live in this region in 2009/10. This development deficit is not a result of Nargis, however; available 2004/05 data for Ayeyarwady region indicate high rates of poverty in this area (relative to other regions and states) years before the cyclone.

Multiple human development indicators—and in particular those related to health—place Ayeyarwady region among the bottom performers. The region is home to the second largest

³⁴ Ministry of Immigration and Population. 2015. *2014 Myanmar Housing and Population Census: The Union Report*. Census Report Volume 2. Department of Population, The Republic of the Union of Myanmar: Nay Pyi Taw.

³⁵ World Bank. 2014. *Myanmar: Ending Poverty and Boosting Shared Prosperity in a Time of Transition: Systematic Country Diagnostic*.

FIGURE 6: Poverty Rates in Myanmar by Region/State

Source: World Bank. 2014. *Myanmar: Ending Poverty and Boosting Shared Prosperity in a Time of Transition: Systematic Country Diagnostic*.

Note: The data in this figure are based on the population weights from 2009/10. Census data of 2014 show Ayeyarwady to be second to Yangon.

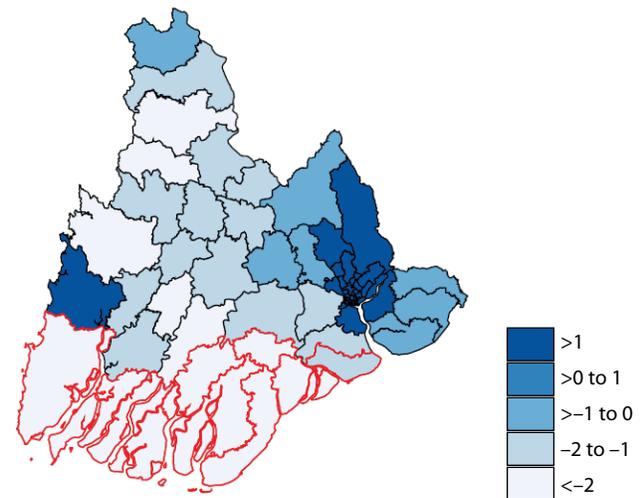
population of stunted children under the age of 5 and has the second highest infant mortality rate in the country, with 87 children dying for every 1,000 live births. The poor socio-economic outcomes are partly a reflection of the economic infrastructure and geography of the region. Only 12 percent of households reported access to electricity for lighting, the second lowest rate of access in Myanmar.³⁶ Moreover, data limitations notwithstanding, it is estimated that nearly one in four of those who work in agriculture are landless despite the region's focus being on agriculture.

The seven cyclone-affected townships in Ayeyarwady region³⁷ fare even worse than the region's average (Figure 7).³⁸ All of them are in the lowest category with the least favorable wealth position. In other words, these townships are amongst the most disadvantaged in a region that is one of the most disadvantaged in the country. Consequently,

³⁶ Ministry of Immigration and Population. 2015. Op. cit.

³⁷ Ayeyarwady region covers seven of the eight most affected townships by Nargis, the eight being in Yangon region.

³⁸ An index of wealth was constructed using asset and demographic indicators from the 2014 Population and Housing Census. The index is constructed at the township level, using principle component analysis to determine the relative weights of the indicators. The choice of indicators was guided by secondary analysis of the literature on correlates of wellbeing in Myanmar.

FIGURE 7: Welfare Index in Ayeyarwady and Yangon Regions

Source: World Bank. 2014. *Myanmar: Ending Poverty and Boosting Shared Prosperity in a Time of Transition: Systematic Country Diagnostic*.

Note: The townships most affected by Nargis are marked in red. A higher welfare index (darker color) signals that a township has a more favorable wealth position.

villages hit by Nargis had to contend not just with the devastation wrought upon by the disaster but also historically high poverty and underdevelopment compared to the rest of the region and country. This was a veritable challenge.³⁹

A within-sample comparison

While a counterfactual scenario cannot be established, a comparison of highly and lightly affected villages helps to pinpoint some noteworthy patterns. SIM 5 analysis shows that there is little difference in the overall economic standing of highly and lightly affected villages, with regard to both farming and fishing. The most striking economic difference is in villagers' indebtedness, where 80 percent of highly affected villages face severe debt problems vis-à-vis 20 percent of the lightly affected ones. Similarly, debt levels are higher for all livelihood groups in highly affected villages, and there is more borrowing against land.

No major differences can be found for social relations whilst highly affected villages had a noticeably higher turnover of leaders in the past two elections. In terms of housing, quality is clearly higher in lightly affected villages. At the same time, there is little difference overall for social infrastructure. A critical difference relates to connectivity, which is distinctively lower for highly affected villages, reflecting their remoteness.

The differences in debt, leadership, and connectivity contribute to a marked difference regarding recovery, with lightly affected villages much more recovered than highly affected ones. Connectivity (the absence of year-round viable transport infrastructure in particular) is clearly an aspect of the area's development deficit. It also complicated the aid effort and slowed recovery.

Leadership changes in isolation are not related to Nargis but are the result of the political transition that led to two rounds of local-level elections. Then again, the frequency of changes in highly affected villages is a reflection of the difficulty of leadership in times of a massive shock to village social and economic life and the need to catch up on development more broadly.

Debt in itself is also not related to Nargis, as it has been the lubricant of the local economy for generations. However, the cyclone had an immediate impact in that it broke the debt-harvest-repay cycle that had been sustaining the main

livelihood, farming, in the Delta. The inability of many villagers to escape a vicious debt cycle is a direct result of Nargis, and one that has had substantial long-term consequences for both household and community recovery.

What if?

The wealth of SIM data over five rounds and nine years allows some observations of what the situation in Delta villages today would be in the absence of the cyclone. First, there are those factors that would be at play regardless, but the impact of which was exacerbated by Nargis:

- Nargis led to labor shortages that in turn led farmers to use more machinery and fertilizer. Out-migration after the economic transformation began would have created labor shortages at any rate, but due to Nargis these appeared earlier.
- The destruction of spawning grounds and the pressure on livelihoods, linked to a post-disaster aid emphasis on providing fishing equipment within the first year after Nargis, led to overfishing in many rivers and streams. Climate change would have eventually led to similar results, but the cyclone accelerated this trend.
- The cyclone damaged embankments, mangrove forests, and other vegetation, which led to more frequent flooding and saltwater intrusion. The increasingly unpredictable weather pattern due to climate change would have had similar effects on flooding, though these would have been lessened had the embankments and vegetation remained in place.
- With regard to social relations, the post-Nargis aid effort, an indirect effect of the cyclone, worsened inter-religious and inter-ethnic relations. And yet, the inter-ethnic/religious violence that has been occurring across different parts of the country since 2012 would have had an inevitable impact on relations in the Delta as well.
- Post-disaster aid had an important effect on altering the gender balance in local-level decision making—another indirect effect of Nargis. While later development aid applied a similar approach to enhance women's roles, these efforts were arguably facilitated by the earlier experience with aid providers.
- Furthermore, many formal (and informal) leaders died during Nargis, requiring leadership changes in numerous villages. However, new leaders would have emerged in any event due to the political transition and accompanying local elections.

³⁹ This dilemma is also revealed in the fact that 25 villages are considered recovered, but only eight are in good economic standing, implying that the pre-Nargis standing to which they recovered had not been good.

Without Nargis . . .

- households would have had more able-bodied family members to take greater advantage of evolving economic opportunities without having suffered a dramatic loss of life;
- environmental protection from mangroves and other vegetation against climate change impacts would be stronger;
- fewer land transactions under debt distress would have taken place;
- villagers would command more assets to adapt to climate change and be better able to invest in order to develop and protect their livelihoods; and
- social relations would have become more individualistic regardless as a result of increasing out-migration.

At the same time . . .

- The post-disaster aid helped not just to build back, but to build back better, and thereby contribute to some reduction in the area's development deficit.
- At a time when Myanmar was still under international sanctions, post-cyclone aid (coordinated through the Tripartite Core Group) paved the way for eventual

engagement with the international community in various ways.⁴⁰

- Nargis helped increase the appreciation by villagers in high-risk areas of the importance to prepare for and protect themselves from natural disasters.

It can be surmised that the sample villages would still be poor today without Cyclone Nargis, but that they would be less in debt and have more assets at their disposal, which would enable them to take fuller advantage of the opportunities the country's economic and political transformations are offering. In other words, though unquantifiable, Nargis left a clear and lasting mark on the economic prospects of the villages it destroyed. Sadly, this is a common outcome of any major natural disaster. And yet, the SIM series has shed unprecedented light on a recovery process from devastation that has had as many twists and turns, and as many paths, as the Ayeyarwady Delta itself.

⁴⁰ By way of example, the World Bank's re-engagement in 2012 through the first approved project in 25 years (the National Community Driven Development Project) built on the findings of three rounds of SIM and accompanying relations with civil society and development partners. SIM also paved the way for Qualitative Social and Economic Monitoring which, in six rounds from 2012 to 2017, expanded understanding of village social and economic life across Myanmar significantly (see World Bank. 2017, op. cit.).

Annex 1

Social Impacts Monitoring Methodology

The SIM series used time-tested social research methods. Based on the early SIM experience, the methodology and tools were adapted to post-disaster contexts to capture post-disaster social impacts across thematic areas (relief, recovery, and resilience; socioeconomic impacts; social relations and cohesion; and local leadership and institutions) and identify and monitor the effectiveness of recovery and aid efforts in the medium to longer term.⁴¹ SIM 4 affirmed the relevance post-disaster social analysis but also pointed out some challenges to doing good social analysis in post-disaster settings, notably time (in the immediate post-disaster period) and local research capacity (particularly in countries with weak capacities). SIM 5 confirmed the validity and relevance of the approach, methodology, and tools for post-disaster qualitative research.

The Enlightened Myanmar Research Foundation conducted the field research and analysis for SIM 5, with technical support from the World Bank and Andaman Research & Advisory. The field researchers were all from Myanmar civil society with extensive experience working in remote villages and conducting social assessments. The social impacts monitoring team represented a mix of Myanmar's ethnic and religious groups. Women formed over half the team and three of the four team leaders. Research was conducted in local languages.

While findings from SIM are representative only of the villages where fieldwork was conducted, triangulation with other data sources suggests that many findings may apply more broadly across Nargis-affected areas. The particular value added by SIM 5, however, is the longitudinal comparison over nine years across a panel of 40 villages, offering

a unique window into the daily lives of villagers in an area severely devastated by a major natural disaster well beyond the timeframe of normal recovery assessments. In order to ensure the ability to make longitudinal comparisons, the methodology implemented in SIM 5 copied that utilized in previous rounds of SIM research.

Focus areas

SIM 1–4 provided assessments of how 40 villages affected by the cyclone were recovering six months, and one, three, and five years after the storm, and what changes had occurred in the social and socioeconomic structures of the villages. SIM was the first time that the social impacts of a natural disaster had been assessed periodically as a core part of a post-disaster needs assessment and formal monitoring system. By SIM 4, the focus of the research had come to include the socioeconomic impacts of the disaster and aid response, local social relations and institutions, and the status of village infrastructure, much of which required repair and reconstruction after Nargis.

SIM 5 included the focus areas of the previous rounds of research while adding new focus areas seeking to capture the long-term or permanent effects from Nargis and subsequent events and how villages have responded to the changed context. These new focus areas are recovery and resilience. Recovery examines the extent of villages' cross-sector recovery from Nargis' effects, assessing the importance of certain factors in both the near term and longer term recovery. It also looked at how the differing vulnerabilities across the panel (as indicated by subsequent disasters) has affected households' and communities' ability to recover.

The resilience focus explored how households and communities adapt to the dual contexts of a post-natural disaster

⁴¹ World Bank and Global Facility for Disaster Reduction and Recovery. 2015. *Analyzing the Social Impacts of Disasters*; Volume I: Methodology, Volume II: Tools.

reality and the effects of climate change that have increased the frequency of weather shocks and other associated challenges. It examined both issues of preparedness, i.e., the extent to which communities in the Delta take explicit actions in expectation of another cyclone or a drought, and how the socio-economy of these communities has changed in efforts to adapt to a post-Nargis context.

Together these two analytical focus areas build a picture of how communities act in an inherently vulnerable region in the years after a massive disaster, while also facing an increased frequency of climate-related shocks. This picture in turn seeks to help national and international policy makers and aid practitioners identify what is most important to help communities prepare for shocks, recover from them, and build the capacity to lessen the impact of such shocks in the future.

The village panel

The 40 villages studied in SIM 5 were the same as in SIM 1–4 in order to allow changing conditions to be tracked over time. In the months after Nargis, panel villages located in the eight most disaster-affected townships were selected to ensure: (a) wide geographic coverage to take account of the level of remoteness; (b) variation in predominant village livelihood types (in rough proportion to the importance of those livelihoods in the Delta economy); and (c) variation in the degree of initial affectedness by Nargis.⁴²

These criteria were hypothesized to affect recovery. Using qualitative panel data over a nine-year period from this purposefully selected sample of villages provided unprecedented insights into how villages recover from a major natural disaster and their trajectories once post-disaster aid flows diminish.

Initially, the degree of affectedness by Nargis was measured by the number of people who died during the cyclone.⁴³ Assessing village life five years after Nargis for SIM 4, researchers found that the level of damage explained a village's socioeconomic condition better than the number of deaths. In other words, the capacity of the survivors to recover from a major disaster depended more on how many

⁴² Full sampling procedures are outlined in the SIM 1 report: Tripartite Core Group. 2009. *Post-Nargis Social Impacts Monitoring*, November 2008; page 43 ff. Four villages thought to be less-affected, control villages, were also included in the sample. These villages turned out to have been affected by Nargis, although to a lesser extent than most other villages. One of the farming villages (not a control village) turned out not to have been directly affected by the cyclone.

⁴³ See Tripartite Core Group. 2009. Op. cit., page 7, footnote 7.

assets they had lost to the disaster than the number of lives lost in the community. Consequently, SIM 4 used the following definitions, as assessed by villagers and researchers:

- Ten lightly/not affected villages: the level of damage to housing and infrastructure was very low, or there was no damage
- Eighteen moderately affected villages: almost every house was slightly damaged but only a few were washed away; schools, roads, and bridges were damaged but to a milder degree
- Twelve highly affected villages: almost every house and the assets they contained were washed away, and important community infrastructure were destroyed.

SIM 5 has used the same definition for affectedness developed for the SIM 4 research.

Overview of research topics and questions

By and large, SIM 5 focused on the same topic areas as SIM 1–4: socioeconomic situation, social relations, leadership, and infrastructure and housing. Villagers, however, were also asked to reflect on the nine years since Nargis and on how their household and their village had recovered, as well as what steps they had taken (again, at both household and community levels) to prepare themselves for future disasters. The introduction of this new focus area, encapsulated within the 'Recovery and Resilience' analysis chapter, sought to examine the longer term effects of Nargis on villages' trajectories, identify where and how resilience has (or has not) been improved, and understand lessons that could be applied in future post-disaster contexts.

The key research questions for SIM 5 were:

Socioeconomic conditions

- Have there been any changes in the livelihood activities in the village over the past four years?
- What are the main factors that affect, implicitly or explicitly, the current livelihood situation of villagers?
- What is the debt situation in the village?
- What are people's livelihood coping strategies today?

Social relations

- How are social relations and social interaction within the village today, and have they changed over time?

- How have interactions between different groups of villagers changed over the last four years? Since Nargis? (includes male-female, rich-poor, inter-ethnic/religions (where appropriate), and young-old interactions.)
- Who in the village are the most marginalized, and how do they cope?
- What about social relations and interaction with neighboring villages?

Leadership

- Who are the formal and informal leaders in the village and what is their age, education, and wealth status?
- Do leaders work together or do they compete with each other?
- Are the leaders effective, and do they support the village?
- Has there been any change in leadership with the 2015 elections, and are new leaders more or less effective? Why/why not?

Village infrastructure and housing

- What infrastructure exists in the village, and in which condition is it?
- Was it destroyed by Nargis and rebuilt subsequently? What is still missing?
- What is the quality of housing in the village?

Recovery and resilience

- Have households and the villages overall returned to the pre-disaster situation in terms of social and economic standing? Are they better off today than before Nargis?
- How have other disasters and external events since 2008 shaped the trajectory of the village's recovery?
- How do households and communities prepare themselves for potential future disasters? Has this changed since Nargis? Was this change due to Nargis directly? To other more recent disasters?

Research respondents

Within villages, sampling protocols were the same as for SIM 1–4. The research team sought to interview a wide cross-section of the community. This included: the village head and other official village leaders; village elders and religious leaders; others who were involved in aid decisions in the village; farmers, fishers, laborers, and those in

other occupations; (potentially) vulnerable groups, including female-headed households, the handicapped or injured, and the elderly; and young men and women. To the extent possible, the researchers tried to get the perspectives on the same topics from each group in order to triangulate the information received.

Fieldwork

Following an intensive week of training in early July, 2017, the research questions were tested and validated in four of the sample villages. This was followed by a debriefing and revision workshop to clarify any questions from the team and make any necessary adjustments to the field guide. The entire team of 16 researchers was present for the training, the field test, and the debriefing session.

Two rounds of fieldwork were then conducted from July to September, 2017. Four teams of three researchers and one team leader each covered the sample villages in two phases. The one-week period between the phases was used for the team to regroup and complete documentation before embarking on the second phase. Each research team spent approximately three days in each village, with additional time allocated for travel.

Research instruments

Three research instruments were used.

First, in-depth interviews were conducted with a wide range of elite and non-elite villagers. Interviews were semi-structured or unstructured, meaning that the researchers had the flexibility to focus on particular issues that the informant had information on and to follow interesting lines of inquiry. Guiding questions were provided to the researchers to help focus interviews, but the researchers were free to amend and adapt these as necessary, in particular, to make sure that they fitted with the local context. A total of 467 key informant interviews were conducted during SIM 5.

Second, focus group discussions were held with different livelihood and identity groups within the panel villages. Depending on the village context, the following groups were invited to participate in focus group discussions: farmers, fishers, laborers, small business owners, religious or ethnic minorities, women (particularly female head of households), members of local groups (such as women's lending groups or DRR committees), youth, and other vulnerable groups identified by the research team. In each, between four and eight informants were interviewed together. Inviting participant 'peers' helped ensure the openness of the discussions. Overall, 132 focus group discussions were conducted.

Across 40 villages, the SIM research engaged 1,243 participants, including 454 women and 789 men.

Third, the researchers also conducted informal interviews and participant observation. This included many late-night discussions with those with whom they stayed, and discussions with individuals and groups over meals. Directly observing dynamics and impacts also provided much information on the way villages were functioning, the interplay between the long-term effects of Nargis and other disasters or exogenous effects on the village, and how broader changes around Myanmar were felt at the village level.

Field data

Three types of data were utilized in the SIM 5 report.

First, the research team collected standardized data on various dimensions of village life. These data were used to generate tables that allow for a mapping of broad patterns and consideration of sources of variation. Many of the indicators collected were based on those used in previous rounds of SIM.

Second, qualitative village summary sheets were written for each village, and qualitative data were entered into spreadsheets to enable rapid analysis of trends.

Finally, case studies on the experiences of particular families and groups in Nargis-affected villages were created. These allowed for in-depth investigations of how Nargis and subsequent events have affected the lives of different people. Case studies focused first on people and families whose experiences were representative of (large subsections of) the general population. This allowed for an extrapolation from the experiences of particular individuals or households.

Case studies also outlined the experiences of 'exceptional' cases, those who have had particularly positive or negative experiences. In these, researchers made efforts to determine why the individual or household had done worse or better than others. Again, this helped determine sources of variation in outcomes and experiences, between and within villages. A selection of the case studies is presented throughout the report.⁴⁴

⁴⁴ Names mentioned in the case studies are not the real names of the respondents.



The Global Facility for Disaster Reduction and Recovery (GFDRR) is a global partnership that helps developing countries better understand and reduce their vulnerabilities to natural hazards and adapt to climate change. Working with over 400 local, national, regional, and international partners, GFDRR provides grant financing, technical assistance, training, and knowledge sharing activities to mainstream disaster and climate risk management in policies and strategies. Managed by the World Bank, GFDRR is supported by 33 countries and 11 international organizations.