Using Vulnerability mapping to measure medium term impact of relocation and resettlement by Special Economic Zones (SEZ): Thilawa SEZ, Yangon Region, Myanmar

Dr. Mike Griffiths, Research Consultant, Social Policy & Poverty Research Group

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Contents

Abstract/Executive Summary

Comparative analysis of households which had been relocated by the Thilawa SEZ, and those which remained in the original communities demonstrated significant differences in the vulnerability profiles of the household socio-economic status. Although overall vulnerability rates did not significantly differ, relocated households had significantly higher rates of vulnerability related to economic dependency, debt and lack of livelihood/income diversity. Detailed analysis further demonstrates that relocated households not only have lower levels of income, but are more likely to have expenditure in excess of annual income, and higher rates of debt and debt interest repayment rates. Due to a greater reliance on food purchases, and income insufficiency, relocated households reported higher rates of food insecurity, and nearly one-third reported taking loans to meet food shortages in the past year. Overall, the pattern of coping amongst relocated households demonstrates significantly lower levels of resilience than non-relocated households, which results in a rapid erosion of economic capital, and subsequently a decline in future coping capacity.

These findings challenge the assumptions around capital-based compensation approaches to relocation programmes, and argue instead that the process of relocation is best compared to a rapid transition to an urban state, where the household economy is more precarious. This precarity demands a high level of adaptive capacity, which in turn requires not only skills but access to resources, markets and welfare mechanisms. This requires a more multi-faceted and nuanced approach to relocation, which is based on a detailed knowledge of the economies and ecologies of communities to be relocated, rather than a simplistic assumption that like-for-like compensation and provision of waged labour will suffice. Thus, when considering whether the provisions made by investors and developers to compensate relocated households is sufficient, the assessment criteria should be based on measures of outcome and impact, not on the size or nature of the compensation per se. Outcome based approaches require systematic study, and the application of research evidence in planning interventions which are known to be likely to contribute to sustainable outcomes. Periodic monitoring and measurement further enables planners to adjust relocation procedures to improve outcomes, and to be aware if outcomes are not being met. This moves away from a more simple, transactional model of compensation, and instead encourages and evidence-based dialogue process with relocated communities.

Background

Special Economic Zones (SEZ)s are a significant feature of industrialization in East Asia, and in particular the Mekong sub-region (Rigg, 2015; Shrestha & Chongvilaivan, 2013), and are also the site of contested narratives of development (Moberg, 2015; Walsh, 2015a), particularly around land issues and forced or semi-voluntary relocation. Whilst the macro-economic benefits of SEZ's are frequently highlighted (Farole, 2011; Wang, 2013) the wider social and environmental impacts, in terms of human development indicate that the benefits of development are not necessarily equally shared (Aggarwal, 2007). Numerous processes have been established to try to anticipate and mitigate negative impacts, such as various forms of impact assessment (Gramling & Freudenburg, 1992; WALLSTRÖM, KYAW, CORNISH, CHAN, & ALLAN, 2016) or post-operational processes such as grievance mechanisms (Kaufman & McDONNELL, 2016). However, narratives surrounding SEZ's and similar large -scale development projects involving relocation of rural population are increasingly negative (Baird & Shoemaker, 2007). Much of the research on the effects of involuntary

resettlement has been done in the context of slum clearances and rehousing (Agbola & Jinadu, 1997; Kleinhans, 2003), with evidence that even well-managed programmes can exert significantly negative psychological and social effects on those relocated (Brooks, Zugazaga, Wolk, & Adams, 2005; Shamai & Lev, 1999). What is significantly overlooked are the communitarian dimensions of the social life of those relocated, where networks of interdependent social relations play an integral part in the wider socio-economic well-being of the community, despite, in many cases, significantly high levels of material poverty (Clampet-Lundquist, 2010; Ekström, 1994). Compensation packages frequently aim to provide the resources for equivalent, or at times better levels of housing and public amenities as before

Writing on measures to prevent impoverishment resulting from relocation, Michael Cernea identifies eight key processes which interplay to affect impoverishment (Cernea, 1996, p. 251). These are, firstly landlessness, with the removal of 'the main foundation upon which people's productive systems, commercial activities and livelihoods are constructed.'(p. 251) Secondly, joblessness, thirdly homelessness, which can also manifest as 'placelessness, loss of a group's cultural space and identity, or cultural impoverishment' (p. 251); marginalization-particularly towards less economically viable livelihoods; increased morbidity through changes in disease exposure and help-seeking patterns; food insecurity; loss of access to common property where loss of ' common property assets belonging to communities that are relocated (forested lands, water bodies, grazing lands, etc.) represents a cause of income and livelihood deterioration that is systematically overlooked and typically uncompensated in government schemes' (p. 252) and finally, what he terms 'social disarticulation' where 'the dismantling of communities' social organization structures, the dispersion of informal and formal networks, associations, local societies, etc., is an expensive yet unquantified loss of social capital [which] undermine[s] livelihoods in ways uncounted and unrecognized by planners, and are among the most pervasive causes of enduring impoverishment and disempowerment.'(p. 252) It is perhaps these more intangible losses which exert the most influence on outcomes, where more tangible measures of inputs, such as housing quality and access to services or utilities may be similar or even improved compared to the previous living context. This challenges simplistic, input-based compensation approaches to resettlement. Michael Cernea again:

> In real life, however, compensation reveals itself to be both impotent and misleading: it is unable to perform the restorative miracles with which it is officially and rhetorically credited. Compensation is flawed and reconstruction is under-financed. The revealing fact is that numerous projects that do pay compensation fail to restore livelihoods and leave people worse off. (Cernea, 2008, p. 90)

The emergence of Special Economic Zones in Myanmar has been a significant part of both the political rhetoric of development (Isono & Kumagai, 2013) and a site for geo-political rivalries to play out, where SEZs are frequently an integral component of strategies to attract foreign investment (Hong, 2014; Slodkowski, 2012). Whilst small-scale SEZs have been established in and around major metropolis, it is the larger-scale projects in places like Dawei and Thilawa which have attracted both significant investment and critical attention (Isono & Kumagai, 2013; Sekine, 2016; D. Tang & Kelly, 2015; Walsh, 2015b). The Thilawa SEZ, in an area 23km southeast of Yangon, has a long and at times contested history. Although only recently established as an SEZ, there are reports

of forced relocation and land seizures as early as 1996 (Earthrights, 2016), after which, in 2013, a more systematic approach was used to appropriate the land earmarked for SEZ development (Earthrights, 2016). The first phase of development, some 400 hectares mainly for industrial use, 84 households were relocated. In terms of compensation,

> Compensation for the displaced residents' crops was provided under the 2012 Farmland Act. Compensation was also provided for livestock, but not for the confiscated land. However[ ], there was a wide discrepancy in the amounts residents received for comparable houses, other structures, crops and livestock lost due to relocation. Each of 68 households residing in the Phase I area was provided a 25 x 50 foot (approximately 116 square meters) plot of land for housing and given the choice of a small house or compensation to build a house on this plot. They were also promised provision of clean drinking water and vocational training'
> (Earthrights, 2016, p. 3)

Numerous studies have attempted to evaluate the resulting socio-economic and health status of relocated households (Physicians for Human Rights, 2014), both in an attempt highlight perceived injustices and to open dialogue for more effective pre-location measures for the remaining 800+ households who will be affected in the second, much larger phase of development, covering a further 2,000 hectares. However, much research to date has used small samples, and more qualitative approaches, which have had little impact on policy makers (Earthrights, 2016). Cernea (1996) recommends an approach which also studies

> successful adaptive strategies, the rebuilding of production systems, and the creation of new social organization patterns [..] longitudinal studies, comparative studies, short-term impact research stand to discover important responses to many unanswered questions about 'what works' and what does not when dismantled societies, kinship systems, and local cultures tend to reassemble, change, and function within new encapsulating environments.(Cernea, 1996, p. 262)

Based in this, a study was commissioned by Paung Ku, in partnership with several agencies concerned with relocation issues in both Thilawa and Dawei, to conduct a more comparative, quantitative and long-term study of the impact of relocation on the socio-economic situation of relocated households, as a way of both informing a more outcome-based set of measures and standards for relocation compensation and post-relocation support, and a baseline to measure longer-term impacts well beyond the initial relocation.

Methodology and methods

Initial interviews were conducted with key informants in the relocated communities, and with NGO workers and activists associated with the relocation issue in the main community of relocated houses in Myaing Thar Yar village, near to Thilawa Special Industrial Zone, on 1st November 2017. After discussion, it was decided to focus on a quantitative approach to measuring household vulnerability, using models and methods applied in wider studies of rural livelihoods in Myanmar by the Government, UN Agencies and INGOs (Griffiths, 2012b, 2015, 2017)

Field research in Myanmar, based on both qualitative and quantitative analysis, has identified key variables which are considered by rural communities to be significant contributors to household poverty, vulnerability and resilience (Griffiths 2012). These include income, assets, livelihood diversity, debt, landlessness, dependency, health, education, water access and "ethics and morals". The measurement of capacities is captured using the 'umbrella' model, developed initially by the Livelihood and Food Security Trust Fund (LIFT) to measure vulnerability in Myanmar. This model collects data on ten indicators (dependency, debt, expenditure, livelihood diversity, food security, water & sanitation, health, social capital and decision making) and calculates relative vulnerability for each of the ten factors based on standard deviation from the population mean. Overall vulnerability at household level is based on having three or more of the ten factors classified as 'vulnerable' – which is defined as having a score less than one standard deviation below the population average for that factor/indicator. It is called the umbrella model because it utilizes a user-friendly umbrella style radar plot to illustrate the relative degree of 'protection' which a household has against shocks and hazards, as well as to provide a localized 'shock/hazard' module by capturing information on common threats such as food insecurity and ill health. The tool draws on Moser's 'Asset Vulnerability Framework,' which measures household economic vulnerability according to ten factors (indebtedness, productive income, livelihood diversity, dependency ratio, asset profile, water and sanitation, food security, health, social capital and decision making power). The model is primarily capacity focused, and does not directly measure exposure to a wide range of shocks, such as flooding or crop failure; what it does is look at the relative capacity of households to respond to shocks. However, certain shocks, such as health and food insecurity, are also contributors to vulnerability-and so are included in the model.

The model thus allows a comparative analysis of the coping capacity of different households exposed to similar threats: for example, we can compare the outcome of flood exposure to households A and B, who have different vulnerabilities. The full list of factors and linked indicators is included in Table 2. The detailed definitions used for each indicator are included in Appendix 1.

Factor	Contribution to vulnerability	Indicator	Source/ validation
Indebtedness	High levels of non-productive debt put livelihood assets at risk (collateral); repayments may reduce essential expenditure; high levels of existing debt can reduce ability to access additional credit	Debt repayment as proportion of income Repayment: income ratio >30% is usually risky	World Bank 1997[1], adapted
Income	Low or negative income: expenditure ratio can lead to reduction in essential spending, increase risk of debt or negative coping responses. High proportion of income spent on non-productive items can lead to under-investment in livelihood, leading to higher risk	Proportion of income expended on non-productive items (food, health, rent, fines)	World Bank 1997, adapted
Assets	Ownership of livelihood assets, convertible assets or crucially, land (in the form of usage right) can provide short term protection against shocks.	Moser's asset vulnerability Framework, adapted for survey	Moser (1998)[2]
Food Security	Current and prior experience of food insecurity is strongly linked with increased vulnerability to future food insecurity. Likewise, food insecurity leading to malnutrition can affect human capital, and put livelihoods at risk.	Consumption index	UNDP[3], modified
Livelihood diversity	Income derived from a single source is more vulnerable to shocks. Multiple sources, or the potential to diversify, can increase protection against shocks affected main/key livelihoods	Livelihood diversity index= number of income generating activities at HH)	DHS (2006) modified
Health	Chronic or frequent illness in primary earner OR one requiring care threatens livelihood security and reduces income, as well as increasing health expenditure; unplanned health expenditure is a common cause of negative coping (e.g. conversion of livelihood assets to cash)	Income generating household member days per year lost work through illness	UNDP modified
Water and Sanitation	Water is an essential for health and many livelihoods; more time taken to draw water reduces time for other activities; unsafe water sources increase risk of ill health which reduce livelihood effectiveness; unreliable water supplies increase resource expenditure	Average time to collect water	DHS (2006)[4]
Dependents	Household members not engaged in livelihoods	Household Dependency scale	TLMI[5] adapted
Social Participation	Persons with higher levels of social participation build up social capital, which can increase the likelihood of relief and assistance in times of difficulty	Participation in village events	TLMI, adapted from p-scale (KIT)
Decision making	Persons with more influence in decision making can have stronger negotiating position for livelihood related factors such as fair pricing, land and asset use	Participation index	SPPRG

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1 World Bank, 1997. Survey of living conditions: Uttar Pradesh and Bihar. Household Questionnaire, December 1997–March 1998.
2 Moser C (1998) Reassessing urban poverty reduction strategies: The asset vulnerability framework. World Development 26, No 1, pp 1-19
3 UNDP (2006) Integrated Household Living Conditions Analysis. Yangon: UNDP
4 DHS (Demographic Health Survey), 2006. Measure DHS: model questionnaire with commentary. Basic Documentation, Number 2.
5 Griffiths M (2007) Economic Vulnerability Score: applications for Community Based Rehabilitation. Internal.

Factors are measured using standardized indicators, which were then converted by mathematical formulas to a scale from 0-1 to allow input into the vulnerability model. The indicators can be collected at a household level or at a community level. Provided that there is a consistent method to convert to a scale, different and even multiple indicators can be used to measure the different factors. This is essential as different indicators, or different calibrations, may be required for different populations or geographical areas. Scores are plotted on a 10-point radar plot, either as a single household plot, a village aggregate, a township or even State level aggregate. This model looks primarily the capacity to cope with shocks and hazards rather than relative exposure. Hence, it is best applied to determine which households are more vulnerable within a given population, rather than for absolute comparison between regions or countries. Vulnerability was defined in relative terms, by measuring the relative deviation of a particular household score from the overall population mean. If the household score for each factor (for example, health) was more than one standard deviation below the overall population score average, then that factor was classified as 'vulnerable'. Overall, a household was classified as '<u>vulnerable</u>' if three or more of the ten factors scored over 1 standard deviation lower than the population mean for those factors.

There are several significant features of this model which need further explanation before we can consider the application of the model. Firstly, the model classifies vulnerability at a household, rather than individual level, thus moving beyond fixed demographic characteristics to more dynamic socio-economic characteristics. However, this may mean that some individual vulnerabilities are masked (such as the vulnerability of older persons within a household). However, in measuring the resilience of a given household, we make the assumption that resources are distributed according to need within a household, thus imputing the overall household vulnerability onto its members. Secondly, as mentioned above, the model relies on measurement against the population average to determine vulnerability. Hence, if a household is classified as vulnerable, it has at least three factors which score significantly lower than the overall population average. In essence, a household is judged according to its neighbors.

Following this, the use of a statistical approach to measure vulnerability (one standard deviation below the average) does mean that vulnerability is dependent on how equally scores are distributed. If some scores were very widely distributed, this would lead to a wider range and a larger standard deviation, meaning that only those with very low scores would be classified as vulnerable. Likewise, if scores are bunched close together, with very little difference between households, then very small differences could lead to being classified as vulnerable. One solution could be to take the average of the scores for all the factors and use that as the basis for classifying vulnerability. However, this would require that each indicator have the same sensitivity and range, in order to contribute equally to the overall score. As this is very difficult to do, the 'three and above' rule (three or more factors more than one standard deviation below the mean) was used. This allows for some errors in households where there may be one or two scores which are low, but the household itself is reasonably secure.

Validation of the model, and links to resilience, are described further in Appendix 1 (Methodology notes).

Sampling and demographics

The sample was designed to collect data from all of the already relocated households (n=100) and from at least 90% of the households earmarked for relocation (n=1100), using sampling to build a case-control comparison population.

Data was collected by training volunteers from the villages concerned, and training was provided over a 2 day period 6-7th December 2017, with data collection taking place over 10 days from 8th-19th December, supervised by trained enumeration supervisors from New Survey Research Team. Data entry was completed by 20th January 2017, and analysis was conducted on the data to construct vulnerability models.

The resulting final sample included 97 households who had already been relocated, and 924 households from areas earmarked for future relocation (total 1,021 households). The relocated households included those relocated in successive phases of relocation, with 71 who had relocated between 2012 and 2014, and 26 who had relocated in or after 2017. Operational reports describe differences in relocation processes relating to the time of relocation, and the majority of the relocated sample are formed from 'early' relocaters. However, due to the small number of 'late' relocaters, it was not possible to demonstrate to statistical significance differences between early and late relocaters for most indicators. For statistical analysis, a 95% confidence level has been utilized unless otherwise stated.

Findings

A few demographic differences emerged when analyzing the household composition of households which had, and had not relocated. First of all, the average household size was larger in relocated households (average 4.6 members vs. 3.8 members for non-relocated households, $p<0.001$), and a higher proportion of households in non-relocated areas being female-headed (14.4% vs. 12.4%),although that difference is not statistically significant. On average, the education level of household heads was slightly higher amongst non-relocated households ($p<0.1$), as measured by the proportion who had achieved middle school education or higher.

Vulnerability (overall)

Using cutoff values derived from national household surveys using the same indicators, the proportion of households classified as vulnerable, and vulnerability in each of the ten categories could be measured. Overall, the proportion of households classified as vulnerable is similar to national figures.

Table 2: Vulnerability levels (overall) of relocated and non-relocated, compared to other similar rural surveys

	Thilawa (2017)	2015 Poverty survey	2016 Mya Sein Yaung Village project baseline
Overall	24.3%	24.25%	28.3%
Yangon Region		31.1%	26.6%
Relocated	25.8%		

Yet to relocate	24.1%	

There is a small, statistically non-significant difference in vulnerability rates amongst relocated households; however, the significant differences between the communities are found in the patterns of vulnerability, as shown in figure 3.

Here, the contrast between relocated and non-relocated households is evident in four main sections: debt, dependency, livelihood diversity and decision making, with small differences in food security also evident. Overall, the picture is of vulnerability in the relocated households being driven by a lack of livelihood diversity, lower employment rates, and subsequent higher rates of both indebtedness, and higher risk of debt.

Figure 3: vulnerability profiles of relocated and non-relocated households
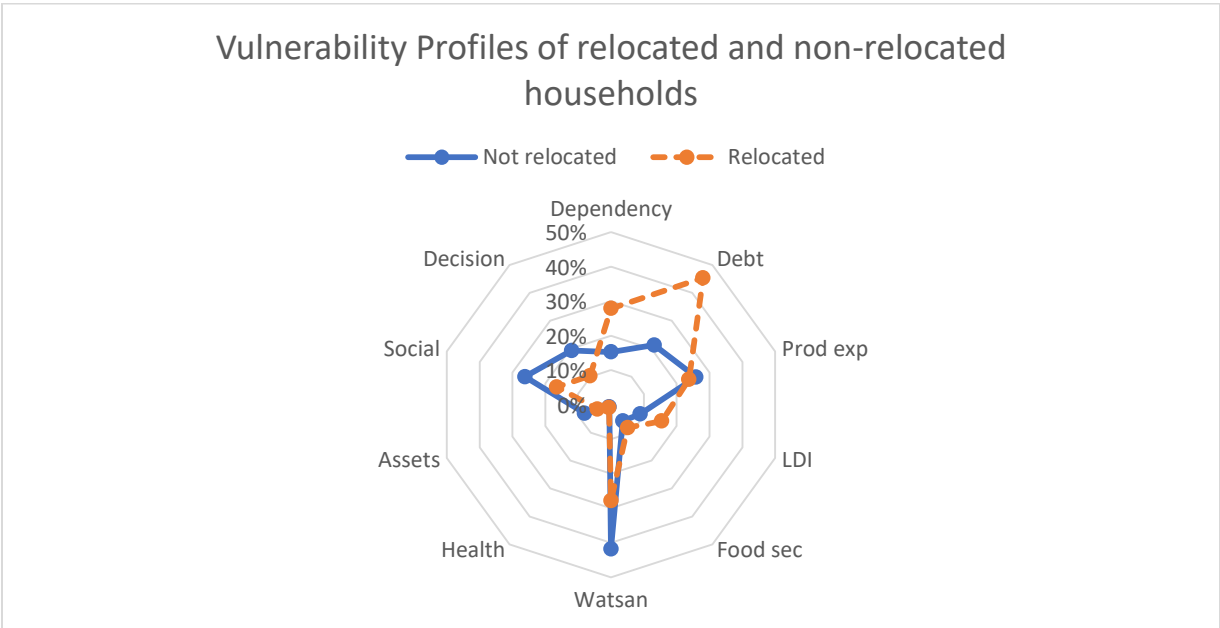
Dependency

Higher levels of economic dependency were found amongst relocated households, specifically amongst working aged adults, where employment rates were lower both for working aged male and female household members, as measured by indication of engagement in household income generation activities by working aged household members not identified as full-time students.

Table 4: employment status, relocated and non-relocated households

	Employment (working age male)	Employment (working age female)
Not relocated	93.7%	76.4%
Relocated	87.9%	69.4%
Total	93.1%	75.6%

Debt

Debt-related vulnerability is primarily measured by a complex formula which takes into account two main factors to measure debt risk: firstly, the debt: income ratio, measured as the ratio of the total sum of household debt against annual household income, and the riskiness of the debt as measured by the nature of the main creditors. In most studies, higher risk creditors include village money lenders and local merchants, with banks, some government and commercial lenders being medium risk, and NGO and family creditors generally being lower risk. Creditor risk is represented in three ways: typical interest amount, risk of repossession of assets upon default, and repayment schedules.

Overall, 61% of all debt of relocated households was owned by money-lenders, compared with 49% of all debt of non-relocated households (p<0.05), and consequently, mean interest rates and interest burdens differ greatly-over double in relocated households compared to non-relocated ones. The rates of borrowing to meet food shortages was high in both communities, but again significantly higher in relocated households, resulting in much higher debt: income ratios. Over 15% of relocated households had a debt burden greater than their annual income, compared to less than 5% of non-relocated households.

Table 5: debt status, relocated and non-relocated households

	Debt to income ratio	Interest Burden	% taking loans for food in past 12 months	Total amount
Not relocated	26.9%	84,855	65.8%	1,022,062
Relocated	59.6%	177,288	80.4%	1,699,691
Total	30.0%	93,637	67.2%	1,086,440

Income/expenditure

Overall, relocated households had lower reported annual income than non-relocated households, and although they also had lower levels of expenditure, nearly half of all relocated households reported annual deficits, with the average income: expenditure ration amongst relocated households at 1.42. When considered on a per-capita basis, per-capita income for non-relocated households is 1.7 times higher than for relocated households.

Table 6: income status, relocated and non-relocated households

	Annual income	Annual Expenditure	Expenditure: income ratio (average)	% with higher expenditure than income
Not relocated	6,292,996	5,608,395	1.24	31.1%
Relocated	4,439,072	4,678,454	1.42	45.4%
Total	6,116,864	5,520,046	1.26	32.4%

Expenditure patterns differed between groups; although core expenditure on food represented 38% of all expenditure amongst both groups of households, relocated households had significantly higher proportions of expenditure on debt (12% vs. 10%) and education (9% vs. 7%), with both groups also spending nearly 14% of all income on health expenses.

Livelihood Diversity

One of the key underlying differences between the relocated and non-relocated households is the access to livelihoods, with diversification being both quantitatively and qualitatively lower amongst relocated households. This appears to have occurred despite some efforts to provide vocational training and access to employment for relocated households by the SEZ programme. This is evident in the higher proportions of households reporting full time waged employment as the main income source amongst relocated households, but the higher levels of reliance on a single income, often from more precarious work (such as selling, day wages and remittances) result in less secure and diversified household income profiles amongst rural households. Underlying this is the displacement of agriculture as a key livelihood source, with only 6% of relocated households reporting any income from agriculture.

Table 7: Main livelihood (by reported major income source, per household)

	Agriculture	Livestock	Selling/store	Daily wage	Full time waged employment	Remittance	Technical work
Non-relocated	22.3%	2.3%	14.3%	43.1%	26.5%	1.2%	1.7%
Relocated	2.1%	2.1%	21.6%	45.4%	37.1%	2.1%	2.1%
Total	20.4%	2.3%	15.0%	43.3%	27.5%	1.3%	1.8%

The proportion of households in relocated areas who have more than one livelihood source is 44%, compared to more than 50% of those in non-relocated areas. The proportions of households reliant on waged labour was higher than national averages in both groups.

Food security

Food security related vulnerability rates were higher amongst relocated households, mainly related to lower rates of consumption of protein and fresh produce by relocated households. In general, relocated households were more likely to buy staple and supplementary food, rather than using home-grown produce. In particular, relocate households were 10% more likely to consume purchased rice, rather than rice grown in their own paddy area. The reliance on bought food is also a likely cause of the higher frequency of loans for food insecurity amongst relocated household, where nearly one third of relocated households reported loans for food insecurity in the previous year.

Table 8: food insecurity reported in previous year

	Percentage reporting food insecurity in previous year	Percentage taking loan for food insecurity in previous year
Non-relocated	23%	17%
Relocated	44%	32%
Total	25%	19%

Water & sanitation

Overall, the water and sanitation indicators were better in the relocated communities, in terms of time and resource consumption to meet water needs, with fewer reported having to buy water regularly. However, this may not take into account regular water meter charges amongst relocated households, or the electricity costs of running electric water pumps.

Table 9: water & sanitation status, relocated and non-relocated households

	Time to get water (Rainy)	Time to get water (Dry)	Buy Water
Non-relocated	20	25	35%
Relocated	13	16	27%
Total	19	24	35%

Health

Overall, compared to national averages, health-related vulnerability rates were low, mainly due to the method used to measure this, which derives from an indicator measuring the impact of illness on livelihood participation. However, more detailed analysis does show that relocated communities on average experience twice the level of illness-related time loss, both for days lost by illness of household members, and days lost due to caring for sick household members.

Table 10: health indicators, relocated and non-relocated households

	Own illness	Days lost caring for others	Average	Average per Household members
Non-relocated	1.4	0.5	1.9	0.5
Relocated	2.8	1.7	4.6	1.0
Total	1.5	0.6	2.1	0.6

There were no significant differences in health expenditure or health related debt between the two groups, with health-related expenditure accounting for 14% of all expenditure in both groups, similar to findings from other surveys. However, a higher proportion of relocated households reported experiencing at least one health emergency in the previous year, and over one third of relocated households reported taking out loans to meet emergency healthcare costs.

Table 11: health emergency and healthcare emergency related loans in previous 12 months

	Reporting health emergency	Loans to deal with health emergency
Non-relocated	39%	25%
Relocated	57%	36%
Total	41%	26%

Assets

Asset profiles showed significant variation between relocated and non-relocated groups, despite little differences in the proportions recorded as vulnerable in terms of assets. The main reason is that, compared to national samples, households in both communities were relatively asset-rich, with higher proportions owning some livelihood related assets, and generally having better quality housing, both of which tended to increase the overall asset value score to above the cutoff level for vulnerability in most cases. However, relocated households were less likely to own larger animals such as cows or buffalos, and poultry, although more likely to own pigs and goats. Generally, ownership of tools and implements was higher in non-relocated households, and there was a slightly higher rate of motorcycle ownership amongst relocated households. In terms of asset value, non-relocated households had net asset worth nearly twice that of relocated households, based on a scoring system used in rural surveys. The overall picture again points to lower rates of livelihood-related asset diversity amongst relocated households, despite the value of assets recorded being similar.

Household assets

Table 12: households owning one or more of different household assets

	Generator	TV	Telephone	Radio	Other
Non-relocated	25%	63%	87%	19%	15%
Relocated	12%	81%	88%	3%	24%
Total	23%	65%	87%	17%	16%

Household asset ownership potentially reflects newly acquired assets, such as TVs, with radio ownership lower. Also, generator ownership reflects lower rates of need amongst relocated households who had greater access to grid electricity than relocated households (76% vs. 5%). House construction amongst relocated households was generally better, with nearly all (93%) having tin/zinc roofing, compared with just over half (53%) in non-relocated communities.

Livelihood assets (animals)

In terms of animals and livestock, not only were relocated households less likely to own larger livestock and poultry, but generally, apart from pigs and goats, the average numbers owned were also much lower, probably due to more restricted land areas for animal husbandry. In general, non-relocated households which owned animals owned twice as many as relocated households.

Table 13: households owning one or more of different animal/livestock assets

	Draught animal	Buffalo/Cow	Pig	Chicken	Goat	Duck
Non-relocated	14%	13%	8%	54%	12%	16%
Relocated	5%	9%	12%	35%	14%	8%
Total	13%	13%	9%	53%	12%	15%

Table 14: number of animals owned by households which own one or more of different animals

	If large animal how many	If poultry how many	If pig or goat how many	if any how many
Non-relocated	1.5	19.7	1.6	22.9
Relocated	0.8	6.6	2.3	9.8
Total	1.5	18.5	1.7	21.6

Livelihood assets (tools/implements)

A similar pattern emerges for livelihood implements, where the percentage of households owning any livelihood relate tools, implements or machinery in relocated households is much lower, with the exception of a small, non-significant difference in sewing machine ownership rates. The lower tools/implement ownership rates are likely to reflect livelihood type, with agricultural livelihoods being more or less absent from households in relocated communities, and hence little or no need for agricultural tools and implements. However, the absence of tools and animals for livelihoods indicates a lack of opportunity, or capital, for developing other livelihoods which are not dependent on waged labour.

Table 15: households owning one or more of different livelihood assets

	Hand tools	Machine	Sewing machine/Loom	Fishing equipment
Non-relocated	5%	7%	4%	2%
Relocated	2%	1%	5%	1%
Total	4%	6%	4%	2%

Transport assets

Table 16: households owning one or more of different transport assets

	Bicycle	Motorcycle	Car	Trawalwgyi	Tricycle	Animal drawn cart
Non-relocated	44%	58%	2%	2%	1%	8%
Relocated	45%	64%	1%	2%	2%	1%
Total	44%	58%	2%	2%	1%	7%

Social participation and decision making

Social and political capital in general showed more positive trends in relocated communities, with lower proportions of households reporting non or occasional participation in village social events, and a small proportion of female respondents who reported non or only occasional participation in

meetings, discussions and decision making. The activities of the various NGOs, CSOs and organizations for the welfare of relocated households, combined with availability of meeting space and capacity building would appear to have contributed to the overall higher rates of social capital.

Table 17: households reporting never or occasional participation in the following events

	Village meetings	Weddings/ funerals/ festivals	Household events	Influences decision making	Participates in discussions	attends meetings	Influences decision making (women)	Participates in discussions (women)	attends meetings (women)
Non-relocated	33%	21%	60%	86%	63%	36%	97%	87%	66%
Relocated	21%	21%	65%	82%	58%	32%	97%	75%	51%

Additionally, when looking at trends for assistance for common crisis such as food insecurity, health emergencies and educational costs, households in relocated communities no more likely to received assistance from community organizations, with 5% of households in each group reporting receiving any assistance from community organizations for a social/economic crisis in the previous year. Households in relocate communities were most likely to report relatives, neighbours or other sources (such as village money lenders) as the main source of assistance.

Conclusions and recommendations

Whilst numerous studies have documented the impact of relocation using ethnographic or other qualitative methodologies, this study, by utilizing a quantitative approach, enables a multi-dimensional analysis of both the impact of relocation and the potential contributors to certain negative outcomes of relocation. Whilst the proportion of households classified as vulnerable using standardized cutoff values did not differ significantly between relocated and non-relocated households, an analysis of the pattern of vulnerability suggests three main conclusions from this study.

Firstly, the lack of opportunities for livelihood development and diversification, manifested by a high degree of dependency on waged labour, a low proportion of households with diversified income, the disappearance of agricultural livelihoods from relocated communities, and lower employment rates amongst working aged adults in relocated communities, is itself likely to be the underlying cause of ballooning debt and rising food insecurity. Whilst SEZ's are generally proposed on the basis of being providers of employment (Aggarwal, 2007) most studies have focused on conditions directly linked to SEZ's, and not the wider economic geography. Whilst employment may be remunerative, with higher wages than outside an SEZ, the provision of waged labour in the absence of opportunities to develop or maintain a diversified household income has resulted a more precarious state. Although current definitions of precarity are largely based on the apparent decline of the European labour-

welfare consensus (Standing, 2013) where declining job and income security are growing in the face of a rolling-back of workers rights and social security, the evidence from this study suggests that a similar process is taking place, with a decline in the income security provided by a diversified agricultural base, the near-absence of State-led welfare, and a weakening of communitarian welfare engendered by the relocation of households from different villages into one place. Critically, perhaps underlying this is a change in relationship to land: where in the rural context, traditionally owned land essentially functioned as a place for shelter and livelihood, relocated households use the land primarily as a living space only, with livelihoods taking place elsewhere. Despite being located in a rural setting, the mode of living is essentially urbanized, with a dislocation of work and living. These findings challenge the assumption that the provision of employment n SEZ's to members of relocated households is a sufficient mechanism to maintain the household economy, and that attention needs to be paid to developing and maintaining a diversified household economy which retains elements of an agricultural economy.

Secondly, the evidence of spiraling debt burden, driven by a mixture of insufficient income, illustrates the short and medium term costs of relocation. This is consistent with other studies such as Hwang et al (2007), who found that despite better housing conditions post-relocation, involuntary migrants displaced by China's Three Gorges Dam project experienced higher rates of unemployment, household debt and relative loss of earnings. In this study, households which relocated in 2013 or 2014 had double the debt burden of non-relocated households, and those relocated in 2017 already had debt and interest burdens 30% higher than non-relocated households, illustrating the rapid rise in debt year on year after relocation. Of note, interest burdens also appear to disproportionately rise, indicating not only higher levels of borrowing, but less favourable borrowing terms. This in turn is linked to an erosion of capital, such that assets such as houses and even land may be sold off to repay debt. This again challenges any concept that asset-based compensation provides sufficient economic protection for relocated households: whilst the houses, land and utilities provided may be of equivalent or higher monetary value, the costs of re-establishing a household, coupled with the immediate decline in income sufficiency, quickly threaten or erode the capital assets.

Thirdly, the increased rates of reported food insecurity, and borrowing for food shortages highlights the already described precarious household economy. Whilst occasional food insufficiency is not uncommon, one in five relocated household reported three or more occasions of food insecurity in the previous year. Again, this is commonly noted in other studies (Cernea, 1998), and is linked to three factors: lower rates of cultivation (and hence higher rates of reliance on food purchases); lower incomes and joblessness, and the cumulative effects of negative income: expenditure and increasing debt interest burdens further eroding capital and coping capacity. When considering resilience, using newly developed resilience indicator tools (Griffiths, 2017), one-third of relocated households had a negative resilience profile-meaning that their erosive coping behaviours (such as borrowing and asset liquidation and sale to meet acute needs) outweighed any constructive and positive coping, such as investment in livelihoods and savings. This was more than twice as high as non-relocated households. This lack of resilience is indicative of a lack of capacity to cope in non-erosive ways, which leads to an undermining of coping capacity for the future. Although linked to the wider provision of resources and opportunities for livelihoods, short and medium term crises require more

accessible and comprehensive safety nets in the form of social protection and social security provisions, to prevent smaller crises from undermining coping capacity and thus further amplifying the impact of subsequent crises.

In terms of recommendations, the findings from this study underline much of the earlier work by Cernea (1996), Hwang (2007) and others on the need to challenge the assumptions that capital-based compensation and provision of waged labour to relocated communities are sufficient to maintain household economies. Firstly, detailed analysis of the economy of communities prior to relocation should be undertaken to ensure that the disruption to economic practices is minimal: if seen through the lens of forced urbanization, we should also consider that most rural households do not have the adaptive capacity to become urbanized overnight; hence, sufficient resources in terms of land, access to markets and investment credit should be made available to allow for agricultural based livelihoods to be continued.

The short and medium term consequences and costs of relocation should be considered, and thus compensation should focus not only on the provision of basic services, but also on social protection and welfare mechanisms, potentially provided through community-based mechanisms. The widespread presence of community social organizations in Myanmar presents a readily available model for sustainable welfare provision (Griffiths, 2016a, 2016b; McCarthy, 2016), and investments here, allied with processes to strengthen access to government welfare, should be a mandatory part of relocation process.

This also points attention to the debt cycle, and the need for relocation processes to be alert to the potential for capital compensation to be rapidly eroded by unsustainable debt. Whilst improved livelihood bases and access to welfare may alleviate some of the need for emergency, high-cost and high-risk loans, the provision of low-interest credit as part of relocation programmes, or facilitating greater access to such credit, may also provide crucial assistance in the first few years of transition.

The final point is perhaps again reflecting earlier work by Cernea and others; that assessments of the requirements of relocating programmes should be outcome and impact based, not based on inputs only (Gramling & Freudenburg, 1992; B.-s. Tang, Wong, & Lau, 2008). Hence, when considering whether the provisions made by investors and developers to compensate relocated households is sufficient, the assessment criteria should be based on measures of outcome and impact, not on the size or nature of the compensation per se. Whilst this may appear somewhat counter-intuitive to planners who wish to know beforehand how much to budget for relocation compensation, careful research may indicate procedures by which compensation measures may be planned and budgeted based on what interventions and measures are known to be associated with more sustainable socio-economic outcomes. Periodic monitoring of relocated communities, using a mix of qualitative and quantitative measures, can also provide ongoing information on the extent to which objectives and obligations have been met. This contrasts with the assumptions made by proposals of capital-based compensation, and provides a useful framework for ongoing dialogue with relocated communities to ensure that their economic platform is sustainable, and not precarious.

Appendix 1: Methodology Notes

This model has been applied in six large studies in Myanmar, including the REVEAL project (Griffiths, 2012a; LIFT, 2014) where it was used as a baseline and endline measurement; as a baseline and endline measurement approach for a livelihoods project for persons with disabilities implemented by the Leprosy Mission; an analysis of rural household vulnerability conducted in the Dry Zone by ActionAid in 2012 (Griffiths, 2012b); a large rural household survey by the Department of Rural Development conducted in all States and Regions in 2015 (Griffiths, 2015); a baseline survey conducted by the Department of Rural Development of the Mya-Sein Yaung project in 2016 (Griffiths, 2016c) and a follow up survey of Mya Sein Yaung project villages in Yangon Region in 2017. Thus, the model has been tested in various contexts to assess its suitability in determining vulnerability and in assisting beneficiary selection. When compared with standard demographic profiling (which would identify as 'vulnerable' any household which is either landless, female headed, has a person with disability, or an older person), the umbrella model has higher specificity and a strongly positive f-test, indicating a high degree of effectiveness in identifying households who would be considered poor or vulnerable by other means.

Indicators used and definitions

The indicators used in this study are based on data available from the 2016 Baseline survey, which was adapted in some places to include specific questions relevant to the construction of the umbrella model for vulnerability. Here, key indicators are described, together with a summary of how the vulnerability indicator was calculated for that particular domain

Assets: the questionnaire recorded total numbers of different types of assets in five categories: household goods (e.g. generator, telephone); livelihood assets (animals, tools, nets, boats) transport assets (bicycles, trawlawgi, boats etc.; household valuables such as gold and housing quality. Land was not included in the asset list, as issues of ownership are often complex to describe. Land use and ownership was recorded separately. Given the difficulty and inconsistency in calculating monetary value of assets, and in particular the regional variation in monetary value, an alternative scoring system was used to calculate asset value. The total score for asset value was calculated using assigned values for different types of asset. To assess vulnerability, the total scores for assets in each category were capped at a maximum level, as vulnerability reflects risk as well as overall value. For example-a household may have 1,000 chickens-but if that represents the sum total of their assets, it represents a risky profile, as the entire asset value could be lost by an outbreak of bird flu.

Asset poverty: asset poverty is measured by calculating the asset value of the lowest quintile and then classifying as 'asset poor' those who fall below that level.

Asset vulnerability: asset vulnerability is measured by calculating the weighted score for assets in the five categories, and if that score is lower than one standard deviation below the population mean, that households is considered 'asset vulnerable'

Debt: the measurement of debt was undertaken not on the total monetary value of the debt, but on the extent to which the degree and nature of indebtedness posed a risk to the household. Hence, debt was measured by 2 factors: the proportion of total household income which was expended on debt servicing and repayment on a monthly basis, and the identity of the major creditors for that household's debt. Whilst there are inevitable variations in practice, qualitative research undertaken in Myanmar has demonstrated that rural households perceive debt from family members or relatives

and NGOs to be low risk, with typically lower interest rates, as compared to loans from community money lenders, banks and 'bosses'. Hence, it is a reasonable assumption that a household whose debt is mostly owned by village money lenders is likely to be paying higher interest rates, and to be at higher risk of negative consequences if they default, than a household whose debt is primarily from family members. Likewise, households who spend 30% or more of their income on debt servicing are likely to be more vulnerable than those whose debt servicing consumes a lower proportion of their income. Households firstly were asked to describe what proportion of their income was spent on what type of expenditure, using the ten seeds method (see expenditure, below). The number of seeds allocated to each category was then converted into a percentage (1 seed = 10%). Next, households were asked to again use the ten seeds method to indicate what proportion of their debt was owed to which type of creditor. A formula was devised to assign risk weighting to the type of creditor. This was combined with the percentage score for proportion of income consumed by debt repayments to calculate an overall 'debt' score.

Debt vulnerability: the overall debt score was inverted (lower score = higher risk) and having calculated an overall debt score, households whose score was more than 1 standard deviation below the mean are considered vulnerable in the debt category.

Decision making: part of the overall measure of poverty and vulnerability takes into account power differentials and participation in decision making. Earlier research by SPPRG has demonstrated a strong correlation between degrees of equality in participation in village decision making and overall poverty rates at village level. Here, decision making was measured in two ways: firstly, an index cataloguing the degree of participation of the household head in village decision making process. The indicator measured the degree of participation at three levels: attending meetings (how often) participating in discussions (how frequently) and influencing decisions (to what extent). A formula was devised to allocate scores to the degree of participation, with higher scores allocated to the 'influencing decision' category. The same questions were then asked about the participation of the women in that household in the village decision making processes. These two scores were combined, and as with the other main indicators was converted to a scale from 0-1 for the purposes of the umbrella model.

Decision making related vulnerability: the overall score was inverted (lower score = higher risk) and having calculated an overall score, households whose score was more than 1 standard deviation below the mean are considered vulnerable in the decision making category.

Dependency: the initial part of the survey catalogued details of each household member, including the way in which they participated in, or contributed to, the household income generation. This allowed for broad categories such as family business, waged employment, daily labourer (casual) student and 'own work'/'own business' and of course, 'other'. Based on this, household members could be defined as economically dependent or not. This category is primarily measuring economic dependency, whereby household members who are active, and perhaps engaged in domestic activities such as child care or care for elderly, are nonetheless not included as economically active unless specified by the respondents. A dependency ratio is then determined by calculating the proportion of household members who are economically dependent. This excludes school aged children who are listed as students, but school age children who are listed as being economically active are included.

Dependency vulnerability: the overall score was inverted (lower score = higher risk) and having calculated an overall score, households whose score was more than 1 standard deviation below the mean are considered vulnerable in the dependency category.

Disability: the national disability survey conducted by DSW and TLMI in 2009-2010 used a hybrid approach to measure disability, with a national prevalence of 2.32%. A more functional based approach was used by the national census, which yielded a prevalence of 4.6%, with the difference almost entirely due to higher prevalence of age-related functional decline. Surveys in the Delta and the Dry Zone using a self-designation approach have typically yielded prevalence rates between 3 and 4%. For the purposes of this survey, self-designation was used, whereby household members were asked whether they had household members who were considered disabled. A short text and accompanying pictures were used to illustrate types of disability for households who were not familiar with the concept. According to the census and DSW criteria, the main types of disability recorded were physical, hearing, seeing and intellectual/mental.

Expenditure: measuring household income is challenging, particularly in rural contexts where income is often seasonal and consumption is potentially reliant on acquired goods as well as monetary income. Likewise, assigning monetary value to income can be problematic, especially where purchasing power of cash varies from region to region. This means that the absolute monetary value of household income does not necessarily correlate with income security. However, measuring expenditure profiles can contribute to the estimation of a reasonable proxy for relative income security. Households who spend the majority of their income on essentials such as food are more likely to be experience food poverty. However, prior research in Myanmar categorized the main types of household expenditure in rural households as follows: Food, Health, Debt repayments and servicing, Education, Livelihoods (including purchase of tools, fertilizers, repair of Equipment etc.), Travel, savings and 'Official and social' which includes various voluntary and non-voluntary contributions such as official and unofficial taxes, donations and contributions. Households were asked to describe what proportion of their income was spent on what type of expenditure, using the ten seeds method. The number of seeds allocated to each category was then converted into a percentage (1 seed = 10%) for each category. Members could allocate half a seed to a category.

Expenditure related vulnerability: expenditure profile was calculated by measuring the proportion of expenditure in three 'essential' categories: food, debt repayment and health. The overall score was inverted (lower score = higher risk) and having calculated an overall score, households whose score was more than 1 standard deviation below the mean are considered vulnerable in the expenditure category.

Food insecurity: the data collected in the Household survey asked questions in section 9 on "Months of adequate household food provisioning". An indicator was derived from 9.1 "Were there months in the past 12 months in which your household did not have enough food to meet your household's needs?", 9.2 (months where food was insufficient) and 10.16 " Overall, how would you compare your household's food availability from all sources in the past 12 months with the previous year?"

Food security related vulnerability: the consumption score was converted into a 0-1 scale for the purposes of the vulnerability model. The overall score was inverted (lower score = higher risk) and having calculated an overall score, households whose score was more than 1 standard deviation below the mean are considered vulnerable in the food security category.

Health: indicators for health were measured in two ways. Firstly, the proportion of household expenditure consumed by health costs was calculated. Secondly, the impact on livelihoods of ill health was measured. This was measured in two ways. In the initial section of the questionnaire, questions were asked of each household member as to how many productive working days had been lost to ill health in the previous year, firstly through the ill health of that household member, and secondly, the days lost by that household member in caring for another household member who was sick. In the final analysis, data was cross-matched with recorded data on whether or not that household member was economically active or not, to accurately capture the extent to which ill health in that household had reduced the number of economically productive days. This can be expressed in several ways: firstly, as the average number of days lost by economically active household members to ill health or to being a carer; secondly, the total number of economically productive days lost by that household; and thirdly, the average number of days lost relative to the number of income generating members in that household.

Health vulnerability: health vulnerability was estimated using the a formula to calculate the average number of days lost relative to the number of income generating members in that household, which was converted into a 0-1 scale for the purposes of the vulnerability model. The overall score was inverted (lower score = higher risk) and having calculated an overall score, households whose score was more than 1 standard deviation below the mean are considered vulnerable in the health category.

Household head: household head was recorded in the household profile section, according to the response of the respondent.

Livelihood diversity: one the key elements of the survey are to measure livelihood diversity at household level. Livelihood diversity is measured in three ways: firstly, by the number of different types of source from which the household derives its income. Secondly, the proportion of income which is derived from different income source, indicating the degree of dependency on a particular source of income thirdly, whether those different sources are regular or seasonal, which further indicates the degree to which the household has regular or irregular income flow. The questionnaire asked each household to use the ten seeds method to indicate what proportion of their income was derived from which source. The main categories for rural livelihoods were derived the household survey. After allocating seeds according to the proportion of income derived from each source, household members indicated whether those source were regular or seasonal. From this, the number of income sources for that household can be measured, as well as the extent to which the household has a well-diversified livelihood portfolio.

Livelihood diversity related vulnerability: the livelihood diversity index utilizes existing formulae to calculate the number of livelihood sources in relation to the household size, further adjusted by the extent to which the household is reliant on more, or fewer income sources, and whether these sources are regular or not. A household with few members with two main income sources, one of which is regular, may be less vulnerable than a larger household with three sources, but which receives 80% of its income from one, irregular source. This does not calculate the monetary value of the derived income, but the extent to which the livelihood portfolio is diversified to ensure that if one source dries up, there is still other potential income streams which can supply family income. The overall score was inverted (lower score = higher risk) and having calculated an overall score, households whose score was more than 1 standard deviation below the mean are considered vulnerable in the livelihood diversity category.

Social capital: the links between social capital and poverty are well established ; less universally acknowledged are methods to measure social capital. Where social capital can be constructed in negative and positive forms , the measurement of social capital needs to be done using contextually relevant factors. The underlying assumption is that households with members who play an active role in community events or activities are more likely to have positive social capital, which can in turn result in increased likelihood of receiving assistance from fellow villagers in times of crisis. Field testing demonstrates this to be the case: most respondents in the pilot testing affirmed that, although households were not intentionally excluded from receiving assistance if they were less involved in community activities, that 'active' households were perceived more favourably as those who had contributed to the community's well-being and so were more likely to received assistance. In this study, households were asked to indicate the frequency of participation in three types of community events: household events such as anniversaries, birthdays, to which near-neighbours would be invited, but not the whole village. Second tier events would be ones where the whole village would be expected to be invited, such as weddings, funerals and religious festivals. Third tier events are official village meetings, such as ones held for planning, information giving etc. This overlaps slightly with the meetings measured in the 'Decision Making' category, but measure frequency of attendance only. The score was derived by multiplying the frequency category ('Always, 'Often' 'Sometimes' and 'Never' by the value of the activity, with third-tier activities being more 'valuable' in terms of building social capital.

Social capital related vulnerability: social capital related vulnerability was estimated using a formula to calculate the overall score for social capital for members in that household, which was converted into a 0-1 scale for the purposes of the vulnerability model. Households whose score was more than 1 standard deviation below the mean are considered vulnerable in the health category.

Water/Sanitation: water and sanitation was measured with specific reference to livelihood related vulnerability. There is a link between water scarcity, the time/resources consumed to meet household water requirements, and livelihoods , whereby time and resources consumed for water acquisition are taken from productive economic activity. Hence, this study measured water and sanitation based on three factors: time taken to acquire household water in the dry season, time taken to acquire household water in the rainy season, and whether the household regularly bought water with cash. These were combined to calculate an overall water and sanitation index.

Water/Sanitation related vulnerability: vulnerability was estimated using a formula to calculate the overall score for water and sanitation based on the average time taken to get water, with additional scoring if water was regularly purchased with cash. This was then inverted and was converted into a 0-1 scale for the purposes of the vulnerability model, so that a lower core constituted higher risk. Households whose score was more than 1 standard deviation below the mean were considered vulnerable in the water and sanitation category.

References

Agbola, T., & Jinadu, A. (1997). Forced eviction and forced relocation in Nigeria: The experience of those evicted from Maroko in 1990. *Environment and urbanization, 9*(2), 271-288.

Aggarwal, A. (2007). *Impact of special economic zones on employment, poverty, and human development*: Indian Council for Research on International Economic Relations New Delhi.

Baird, I. G., & Shoemaker, B. (2007). Unsettling experiences: Internal resettlement and international aid agencies in Laos. *Development and Change, 38*(5), 865-888.

Brooks, F., Zugazaga, C., Wolk, J., & Adams, M. A. (2005). Resident perceptions of housing, neighborhood, and economic conditions after relocation from public housing undergoing HOPE VI redevelopment. *Research on Social Work Practice, 15*(6), 481-490.

Cernea, M. M. (1996). Understanding and preventing impoverishment from displacement. *Understanding impoverishment: the consequences of developmentinduced displacement. Berghahn Books, Oxford*, 13-32.

Cernea, M. M. (1998). Impoverishtnent or social justice? A model for planning resettlement. *Oxford, New Delhi*.

Cernea, M. M. (2008). Compensation and benefit sharing: Why resettlement policies and practices must be reformed. *Water Science and Engineering, 1*(1), 89-120.

Clampet-Lundquist, S. (2010). "Everyone had your back": Social ties, perceived safety, and public housing relocation. *City & Community, 9*(1), 87-108.

Earthrights. (2016). *Analysis of the Affected Communities' Rights and Remedies Under Myanmar Law and JICA's Guidelines*. Retrieved from Chiang Mai: https://earthrights.org/wp-content/uploads/thilawa_briefer_-_earthrights_international_0.pdf

Ekström, M. (1994). Elderly people's experiences of housing renewal and forced relocation: Social theories and contextual analysis in explanations of emotional experiences. *Housing Studies, 9*(3), 369-391.

Farole, T. (2011). *Special economic zones in Africa: comparing performance and learning from global experiences*: World Bank Publications.

Gramling, R., & Freudenburg, W. R. (1992). Opportunity-threat, development, and adaptation: Toward a comprehensive framework for social impact assessment. *Rural sociology, 57*(2), 216-234.

Griffiths, M. (2012a). *Gender and Age related impact of Disability on Household Economic Vulnerability:analysis from the REVEAL study in Myanmar.* . Paper presented at the World Disability Report, Sydney University. http://www.sydney.edu.au/health-sciences/disability-symposium/.../MGriffiths.pptx

Griffiths, M. (2012b). *Using the Umbrella Model to measure Household Vulnerability: application in Myanmar to assess disability related vulnerability* Paper presented at the 1st Global CBR Congress, Agra, India.

Griffiths, M. (2015). Dimensions of poverty, vulnerability and social protection in rural communities in Myanmar. *Departmet of Rural Development, Government of Myanmar*.

Griffiths, M. (2016a). Community Based Social Protection and Maternal and Child Cash Transfers. *Bulletin of the Social Policy & Poverty Research Group, 1*(10).

Griffiths, M. (2016b). Community Social Protection Organizations in Rural Myanmar. *Bulletin of the Social Policy & Poverty Research Group, 2*(3).

Griffiths, M. (2016c). *Poverty Reduction through Rural Development: the Evergreen Village Project*. Retrieved from Nay Pyi Taw:

Griffiths, M. (2017). *Resilience and Vulnerability in Rural Communities in Myanmar*. Retrieved from Yangon, Myanmar:

Hong, Z. (2014). Japan and China: Competing for Good Relations with Myanmar. *The Journal of East Asian Affairs, 28*(2), 1.

Hwang, S.-S., Xi, J., Cao, Y., Feng, X., & Qiao, X. (2007). Anticipation of migration and psychological stress and the Three Gorges Dam project, China. *Social science & medicine, 65*(5), 1012-1024.

Isono, I., & Kumagai, S. (2013). Dawei Revisited: A Reaffirmation of the Importance of the Project in the Era of Reforms in Myanmar. *ERIA Policy Brief, 1*.

Kaufman, J., & McDONNELL, K. (2016). Community-Driven Operational Grievance Mechanisms. *Business and Human Rights Journal, 1*(01), 127-132.

Kleinhans, R. (2003). Displaced but still moving upwards in the housing career? Implications of forced residential relocation in the Netherlands. *Housing Studies, 18*(4), 473-499.

LIFT. (2014). Reducing Economic Vulnerability Through An Equitable/Inclusive Approach To Livelihoods (REVEAL) from Livelihood and Food Security Trust Fund http://www.lift-fund.org/project/reducing-economic-vulnerability-through-equitableinclusive-approach-livelihoods-reveal

McCarthy, G. (2016). *Building on what's there: Insights on social protection and public goods provision from central-east Myanmar*. Retrieved from

Moberg, L. (2015). The political economy of special economic zones. *Journal of Institutional Economics, 11*(1), 167-190.

Physicians for Human Rights. (2014). *A Foreseeable Disaster in Burma: Forced Displacement in the Thilawa Special*

Economic Zone Retrieved from https://s3.amazonaws.com/PHR_Reports/Burma-Thilawa-English-Report-Nov2014.pdf

Rigg, J. (2015). *Challenging Southeast Asian Development: The Shadows of Success*: Routledge.

Sekine, Y. (2016). Land Confiscations and Collective Action in Myanmar's Dawei Special Economic Zone Area: Implications for Rural Democratization.

Shamai, M., & Lev, R. (1999). Marital quality among couples living under the threat of forced relocation: The case of families in the Golan Heights. *Journal of marital and family therapy, 25*(2), 237-252.

Shrestha, O. L., & Chongvilaivan, A. (2013). *Greater Mekong Subregion: From Geographical to Socio-Economic Integration*: Institute of Southeast Asian Studies.

Slodkowski, A. (2012). Japan Inc Steals a March in Myanmar. *Reuters Special Report, 3*, 1-7.

Standing, G. (2013). Defining the precariat: A class in the making. *Eurozine*.

Tang, B.-s., Wong, S.-w., & Lau, M. C.-h. (2008). Social impact assessment and public participation in China: A case study of land requisition in Guangzhou. *Environmental Impact Assessment Review, 28*(1), 57-72.

Tang, D., & Kelly, A. (2015). *Dawei SEZ: The Emerging Economic Landscapes of Myanmar.* Paper presented at the International Conference on Burma/Myanmar Studies.

WALLSTRÖM, A., KYAW, D., CORNISH, G., CHAN, D., & ALLAN, D. (2016). GENDER PARTICIPATION IN THE EIA PROCESS IN MYANMAR.

Walsh, J. (2015a). *The special economic zones of the Greater Mekong Subregion: Land ownership and social transformation.* Paper presented at the An international academic conference.

Walsh, J. (2015b). Thilawa special economic zone and the single window. *International Journal of Services Technology and Management, 21*(1-3), 27-39.

Wang, J. (2013). The economic impact of special economic zones: Evidence from Chinese municipalities. *Journal of development Economics, 101*, 133-147.