

Reducing Relocation Risk in Urban India
Risk Assessment Report

Framing and Illustrations

Credits by Amir Bazaz; Garima Jain; Teja Malladi; Sushmita Ramoji; Aishwarya Balasubramanian, Greeshma Hegde from Indian Institute for Human Settlements

August 2016

This document is an output from a project funded by the UK Department for International Development (DFID) and the Netherlands Directorate-General for International Cooperation (DGIS) for the benefit of developing countries. However, the views expressed and information contained in it are not necessarily those of or endorsed by DFID, DGIS or the entities managing the delivery of the Climate and Development Knowledge Network, which can accept no responsibility or liability for such views, completeness or accuracy of the information or for any reliance placed on them.

The Research project Reducing Relocation Risk in urban areas is carried out by The Bartlett Development Planning Unit (DPU) at UCL, the Indian Institute for Human Settlements (IIHS) the Latin American Social Science Faculty (Facultad Latinoamericana de Ciencias Sociales (FLACSO), and Makerere University.

This report is downloadable for free from: www.bartlett.ucl.ac.uk/dpu/reducing-relocation-risk/

The findings, interpretations and conclusions expressed here do not represent the views of any organisations that have provided institutional, organisational or financial support for the preparation of this paper

Designing Support by Pallavi Sharma and Nawaz Khan

Reducing Relocation Risk in Urban India

Risk Assessment Report

Framing and Illustrations

Lead Authors

Amir Bazaz; Garima Jain; Teja Malladi; Sushmita Ramoji

Contributing Authors

Aishwarya Balasubramanian; Greeshma Hegde

Reviewed by

Allan Lavell; Cassidy Johnson; Rohit Jigyasu; Shuaib Lwasa

Edited by

Nishtha Vadehra; Shyamala Suresh

Contents

List of Appendices & Tables	4
List of Boxes & Figures	5
List of Abbreviations & Sites	6
Executive Summary	7
Introduction and Setting the Risk Assessment	9
Framing Approaches	13
• Literature Review.....	13
• The Beginnings	13
• Role of Institutions: How Different is Asset Building from Asset Accumulation?	14
• Summarising the Key Arguments	14
• Assessing Costs and Benefits in the Context of Resettlement and Relocation	15
• Summarising our Approach.....	15
Risk Assessment Framework: India	17
Risk Assessment at City/Regional Level	19
• Regional Context of Odisha and Andhra Pradesh	20
Risk Assessment at Settlement Level	27
• Summary of Findings	28
• Ganjam District (Rural).....	33
• Visakhapatnam (Urban)	38
• Comparing Outcomes across Sites	43
Recommendations	47
Key findings	55
Bibliography	57
Appendices	59

List of Appendices & Tables

List of Appendices

Appendix 1: Review of Literature on Asset Accumulation	59
Appendix 2: Bibliography for Risk Assessment	60
Appendix 3: Bibliography for asset accumulation	61
Appendix 4: Conceptual Framework	68
Appendix 5: Risk Assessment at Site Level	69

List of Tables

Table 1: Health Indicators for Andhra Pradesh and Odisha	20
Table 2: Slum Population in Andhra Pradesh and Odisha	23
Table 3: Population with Access to Tap Water in Andhra Pradesh and Odisha	23
Table 4: Visakhapatnam City Profile	24
Table 5: Ganjam District Profile	26
Table 6: Berhampur City Profile	26

List of Boxes & Figures

List of Boxes

Box 1: Disability	34
Box 2: Loss of Entitlements	35
Box 3: Mixing Low Castes with High Castes	36
Box 4: Moving Fishermen Away from the Sea	38
Box 5: Outcomes Experienced by the Most Vulnerable in the Community	40
Box 6: Unclear Criteria for Beneficiary Selection	42
Box 7: Issues with Beneficiary Selection and Allotment	43

List of Figures

Figure 1: Crude Birth Rate (1971–2011) for Andhra Pradesh and Odisha	21
Figure 2: Crude Death Rate (1971–2011) for Andhra Pradesh and Odisha	21
Figure 3: Infant Mortality Rate (1971–2011) for Andhra Pradesh and Odisha	22
Figure 4: Literacy Rates (1951–2011) for Andhra Pradesh and Odisha	22
Figure 5: Changing Temperature Trends in Visakhapatnam district Over the Last 100 Years	25

List of Abbreviations & Sites

Abbreviations

AP	Andhra Pradesh
APL	Above Poverty Line
BPL	Below Poverty Line
CDKN	Climate and Development Knowledge Network
GVMC	Greater Visakhapatnam Municipal Authority
IIHS	Indian Institute for Human Settlements
JNNURM	Jawaharlal Nehru Urban Renewal Mission
NGO	Non-Government Organisation
ODRP	Odisha Disaster Recovery Project
R&R	Resettlement and Relocation
SEZ	Special Economic Zone
VAMBAY	Valmiki Ambedkar Awas Yojana

Sites

ASR	Alluri Sitarama Raju Nagar, Visakhapatnam
DLR	Devi Nagar, Ramapalli and Lakshmipur, Ganjam
MRK	Markandi, Ganjam
PUD	Pudimadaka
SEV	Sevanagar Madhurawada, Visakhapatnam
SGN	Sonia Gandhi Nagar, Visakhapatnam

Executive Summary

In India, resettlement is undertaken within various contexts, in order to achieve development or to reduce risks by moving people out of harm's way. This report focusses on cases of the latter, where people are relocated either pre-emptively from untenable land or in post-disaster situations. The aim is to understand the various processes involved in making decisions that lead to such interventions, their outcomes in terms of costs and benefits—for the people and the city. The report also seeks to examine the relationship between these outcomes and decisions, using several case studies undertaken over the earlier phases of this research (presented in the Diagnostic Report, Site Reports Section I, II, III and IV), and thereby, to arrive at alternative approaches to current forms of resettlement.

Our approach towards assessing costs and benefits is situated in the larger framework of structural risks, which goes beyond the site* to a larger regional perspective of the city, reflecting the long-term historical trends of such risks as well as providing a context for future risks created by the processes of urbanisation and increasing climate variability. Assuming that people follow an 'asset accumulation' approach to adapt to risks, their existing risks and opportunities are understood—particularly in their current spatial contexts—from the perspective of social, environmental, economic and physical assets as well as overall quality of life. The costs, then, either take the form of impacts that reduce their asset accumulation (created risks) or things that were lacking to begin with and an opportunity was lost by not addressing them after the intervention (continuing risks). The benefits, on the other hand, include new assets (reduced risks) or risks not created (avoided risks). These are understood qualitatively based on responses from households regarding their experiences of resettlement interventions. Attention has been paid to the most

vulnerable communities (the disabled, the old, women, particularly from the lower castes, vulnerably employed, etc.) to understand their needs, which often get lost in aggregated studies.

The report analyses six of the 19 sites under study (three in rural Odisha and three in urban Andhra Pradesh) using a cost-benefit framework, and makes recommendations based on the key characteristics of the settlements (original site, project level decisions and designs, etc.). Some of the key findings from the assessment are as follows:

- There are structural issues that exist in these regions with regard to housing conditions, increasing slum populations and their access to services, and disease incidence, particularly in select cities of Andhra Pradesh. Odisha has been struggling with other development indicators such as health and education that are improving a lot slower than the national averages. The burden of these living conditions may have a detrimental effect on the overall developmental gains made and must therefore be addressed on priority without adversely impacting other indicators such as access to livelihoods and other social services.
- While the overall physical outcomes of these resettlement interventions are better than other outcomes, basic needs and services (quality and reliability of drinking water sources, solid waste management, reliable public transport and early warning systems) are not being adequately addressed.
- Both social and economic outcomes are seen to improve only in the case of in situ resettlement or in cases where the distance between the old and new sites is minimal.

* Understood here as single intervention project bound within a geographical location as well as timeframe.

- Environmental outcomes need to be understood within the context of the site's exposure to hazards and the dependence of people on natural resources.
- The overall quality of life outcomes (understood in terms of people's ability to access various resources) seems to have deteriorated for almost everyone, particularly for those who have had to forfeit their entitlements (e.g. BPL cards) after relocation. In many cases, while no new risks are created, older constraints to accessing various basic services still continue at the new sites, thereby adding to the opportunity cost.
- The most beneficial and least costly outcomes are experienced when all aspects of original life are replaced or recreated on a one-is-to-one basis. This is most evident in the case of in situ resettlement, which has the best outcomes, although there is a need to include proper temporary housing options or rental support for in situ projects. Relocation is recommended only in cases where in situ upgradation is not possible, and the distance between the old and new sites is minimal (less than 2 kilometres in rural areas and less than 5 kilometres in urban areas), such that continuity of life services can be maintained.
- People who have lived in locations that have been deemed 'untenable', for more than 5 years, tend to develop adaptation strategies to deal with those risks. The relocation of such settlements should be avoided at all costs, since it tends to increase the socio-economic burden on the people as well as the city at large.
- Although at present, the role of climate change in increasing future risks is barely acknowledged, suitable models and simulations must be devised to inform design and policy actions towards overall and long term risk reduction.
- In addition to the size of the settlement, the level of homogeneity must determine the design of a Rehabilitation and Resettlement (R&R) project. Heterogeneity in small sites, if not dealt with on a case-by-case basis, can lead to the creation of unforeseen burdens, while in large R&R projects, as long as the larger needs are taken care of, the results can still be positive.
- While it is often advocated to have the beneficiaries contribute financially so that they have some 'skin in the game', thereby enabling participation and involvement, we have observed that in many cases this causes financial burden and can lead

to the exclusion of those who cannot afford such investments. An alternative could be to have people contribute as labour ensuring both quality and involvement.

- Land tenure is still contested in urban areas, whereas in rural areas where land tenure is secured within the project, outcomes are seen to be a lot more positive.

This report must be read in conjunction with the previous reports from the research study, the Diagnostic Report, the Site Report (Sections I, II, III and IV) as well as the Consultation Reports I and II.

Introduction and Setting the Risk Assessment

Introduction and Setting the Context of Risk Assessment

Resettlement and relocation (R&R) is undertaken as a corrective or pre-emptive measure in the context of disasters or disaster risk, respectively. The latter approach is often adopted by key development agencies (housing and slum development boards, city planning authorities, environmental agencies), while the former falls under the purview of disaster response, reconstruction and rehabilitation agencies (disaster management authorities). Both these institutional arrangements, however, see development and disaster risk reduction in isolation, and their priorities are limited to either the provision of housing or, using risk reduction as the main lens, ‘moving people out of harm’s way’. We are well aware that such R&R interventions often create other vulnerabilities that are social, economic, environmental and/or political, leaving people and communities worse off than they were to begin with.

Disaster could, in fact, be understood as an indicator of ‘non-development’. It is a condition where vulnerabilities, exposure and lack of capacities to cope with an external hazard leads to losses. Therefore, any intervention under consideration must be oriented towards development that is sustainable and, more importantly, transformative in the sense that existing vulnerabilities and exposures are reduced. In addition, interventions must strengthen risk management potential such as coping and/or adaptive capacities, thereby helping improve quality of life.

Among populations at risk, those living in conditions of poverty are often found to be the most exposed and vulnerable. They could include those who are officially below the poverty line (BPL), but also those just above the poverty line (APL), whose vulnerabilities may not only be driven by income poverty but due to lack of access to other entitlements and services. Yet, it has been observed through case studies that various

decision making and implementation processes often push APLs back below the poverty line and keep them trapped there—sometimes even leaving them in a worse condition than BPLs—by excluding them from various entitlements. This is a crucial problem which is seen to exacerbate structural problems that already exist. Therefore, this study also focusses on the most vulnerable and disadvantaged groups.

Many resettlement decisions and processes are guided by a narrow view of risk that essentially relates to avoiding exposure to hazards and thus eliminating or reducing the suffering that results from disaster risk. This is determined by how disaster risk reduction is viewed and who enacts its postulates and seeks results. On the other hand, when resettlement schemes are analysed from an outcome perspective—and often found to be lacking—the analysis is undertaken on the basis of a far wider range of ‘risk’ conditions, including livelihood conditions, health, social cohesion and employment opportunity, which are never taken into account while defining resettlement criteria and taking decisions. The contrast between considerations of disaster risk and everyday risk, and the lack of a clear focus in resettlement policy and action on achieving wider development goals (including contributions to poverty reduction, land use planning, environmental control) may, in many ways, relate to the sectorisation of attitudes to disaster risk and the lack of integration with wider development concerns and actors. Outcomes then become the result of standard approaches, personal attitudes and behavioural responses, and cease to be systematic in responding to the wider conceptualisation of risk reduction.

This project identified key aspects of research within the broad category of risk assessment. The motivation for it came from the conclusion drawn from numerous cases from varied contexts that R&R, in general, has not been addressing risks in a comprehensive manner.

Poor economic, social and environmental outcomes have been reported with respect to the population that is resettled or relocated. The overall quality of life outcomes, as assessed using access and perceptions, have also been observed to vary. In many cases these outcomes can be traced to the various decision-making and implementation processes, a narrow focus on which could provide insights into policy directions for better developmental outcomes.

While the issue of locational hazard exposure may have been addressed, R&R interventions have led to the creation of new kinds of risks. These risks, as our primary research indicates, are manifold, complex and arise out of either poor design or the decision-making process itself. As a result, relocated populations end up having to bear certain costs with very little benefits. In addition, it is suspected that the distribution of costs and benefits is uneven—some households and communities bear a substantial proportion of the accumulated costs while others manage to reap greater advantages.

We have also re-evaluated the key questions that we had posed during the initial framing of the project, in an attempt to qualify or re-qualify them based on the intense primary work undertaken during the course of the project.

This research seeks to understand the social and economic implications (essentially elements of outcomes, such as livelihoods, cost of living) of resettlement policies, specifically in urban contexts. In doing so, it identifies the costs and benefits of resettlement, from the state and individual perspective, to assess the need to resettle or relocate (in India, this process culminates in a Detailed Project Report, which, in theory, is a complete financial and economic assessment). There are bound to be some divergences between the state and individual perspectives and it is primarily these divergences that need to be captured and explained. It is a difficult task to isolate normative from motivated perceptions, which then have to be triangulated through multiple responses.

In the risk assessment phase, we have attempted to analyse three basic issues:

- A quantitative and qualitative evaluation of the contexts of individual cases, and the experience of social and economic implications of R&R. By doing so, we highlight the multiple dimensions of costs (new and existing risks) and benefits (risks avoided or addressed). Since the household is our unit of inquiry, we have focused our analysis at the household level but agglomerated the experiences at the settlement or neighbourhood

level. Particular cases of the most vulnerable have been singled out to elaborate their needs and safety net requirements, which often get lost in aggregated data.

- Evaluating the assessment of R&R from the state's perspective. The initial phase of the project examined the decision making and implementation processes of the state. We highlight the divergence between the perception and experience of R&R across the resettled population and the administration. By doing so, we attempt to draw a (qualitative or, if possible, quantitative) relationship between design/decision-making and outcomes, and highlight the non-recognition of certain risks (or the experience of risks) in the original assessment context.
- Assessing the structural and non-structural drivers of risk while drawing from the lived experiences of inhabitants in their original and resettled contexts. It is our contention that the state is unable to eliminate the structural drivers of the experience of risk (poverty, informal jobs and settlements) and its instrumentality, like political agency and individual/household capabilities. We argue that unless and until the structural drivers of poverty, unemployment and informality are addressed, R&R would merely be an instrument of risk transfer rather than an instrument to eliminate risk.
- The objective of this research is to systematise costs and benefits and lessons learnt, examine the advantages and disadvantages with regard to the reduction of future economic and social costs, and arrive at the best policies for maximising beneficial outcomes.
- Having completed our primary research according to a clearly identified typology, we provide an assessment of various elements that constitute costs and benefits (including the processes followed). This is mainly to enable the creation of an inventory of the typology of costs and benefits across possible categories/typologies of R&R. Drawing linkages with outcomes, through collected primary data, enables us to highlight the key lessons learnt (See Appendix 5)
- There is a need for a variant of temporal assessment that captures the prospect of future reduction/non-reduction of costs/benefits. Using a pure economics frame, this analysis can be completed in a traditional cost-benefit and net present value frame. With a different approach to temporality,

our research assessment framework captures risk at the regional and city level, and also in a historically evolutionary context, which allows us to assess the potential of the development framework in addressing the structural drivers of risk. While doing so, we analyse the city and regional development agenda and their capacity and ability to address the structural dimensions of risk. Using this assessment, in a historical context, we draw conjectures that position us appropriately while commenting on the possibility of reducing future economic and social risks (See Risk Assessment at City/Regional Level Section).

- Using a qualitative/quantitative assessment framework, we further analyse the key categories of risk, as indicated by the results of the field work, in the local context. Field work also enabled us to identify the key dimensions of risk, which were broadly found to be linked with livelihoods and social and physical determinants. Using the framework of building adaptive capacities, we drew conclusions about beneficial outcomes and the overall well-being of the household/community. The implications for policy can be studied by identifying certain key sets of levers that could potentially help build adaptive capacities among resettled/relocated populations.
- While evaluating the experience of risk in terms of costs and benefits, we pay equal attention to reflecting and commenting on the methodological aspects of assessing R&R decisions in the context of these outcomes. We believe that this approach constitutes a major contribution towards widening the evaluative framework (which is significantly skewed towards the use of quantitative assessment tools) of R&R experience and decisions. The key objective is to achieve a mainstreaming of the assessment framework and incorporate its learnings into the development planning processes, including those pertaining to R&R-related hazards.

Framing Approaches

The present research proposes to understand the wider regional and local dynamics of development as a background to exploring various possible interventions to achieve transformative development (and not merely risk reduction). While doing so, we locate site-specific analysis within the wider context of regional and city development agenda and use the analytical reference of outcomes as a critical lens to examine the conditions and drivers of regional and local development trajectories. This approach enables us to examine whether the household experience of costs/benefits is an outcome of a structural problem or it has more to do with individual capacity and ability to cope or adapt. This framework could potentially be used for development planning in various temporal and spatial dimensions, while making decisions about and undertaking any intervention. In cases where resettlement has already taken place, the development pathways can be understood by examining the outcomes. These outcomes also offer a critique of the development planning process and enable the identification of key lessons for policy making in the context of R&R in particular and development planning in general. In the following sections we situate our research within a broader theoretical framework and explain the reasons for selecting a particular approach.

Literature Review

Households tend to follow a strategy of accumulating assets, which could be understood as an attempt at building their capabilities for the future (C. O. Moser, 1998; Sen, 1981). This becomes part of their coping strategy while living in areas exposed to hazards, be it accumulating housing options, access to livelihoods or aid in the time of disasters, and people are likely to make some trade-offs based on this strategy.

Asset accumulation is considered to be a key element in contemporary development policy, particularly in the context of building adaptive capacities of communities and households. This has resulted in remarkable successes in the context of addressing poverty and inequality challenges. We observed, during the initial phases of this project, that the ability (capabilities) to accumulate assets as well as to use a diversified asset accumulation strategy (innovative livelihood practices) clearly provides a social and economic buffer to resettled/relocated households. Hence, it is important to understand why asset accumulation can prove useful while dealing with the shocks and stresses involved in R&R.

The Beginnings

The 20th century has witnessed a remarkable shift in strategies that could meaningfully reduce poverty, particularly in the Global South. This has primarily been achieved through the design and implementation of innovative social protection policies. Asset accumulation, livelihood diversification, innovative social safety nets and comprehensive risk mitigation are the principal levers of new poverty reduction strategies. The 19th century dominantly relied on policies such as providing income-based incentives (like wage protection), social services and basic consumption needs to the poor, which were limited in their scope. International development assistance led to a shift in policy focus and redefined poverty reduction approaches as new social policy 'domains', viz. social sectors, social protection and social development. Since their inception, the new social policy domains, while addressing equity and social justice, still face significant challenges in terms of effective implementation (Dani & Moser, 2008; Moore et al., 2001; M. Sherraden & Sherraden, 2008; Signe-Mary & Sherraden, 2008). This new approach was further strengthened in its operational focus,

giving way to the idea of ‘sustainable livelihoods’ as a means to poverty reduction. Sound evidence began to emerge that supported the view that increasing assets and capabilities were crucial to improving well-being (Dani & Moser, 2008). In practice, policies that aim to reduce poverty view it as a state of lack of income. In doing so, they fail to recognise poverty as a state of multidimensional deprivation that includes “lack of assets”, “entitlements”, “capabilities” and “rights” (Carter, 2007; Schreiner et al., 2005). It is in response to this that asset building and asset accumulation based concepts emerged as dominant complementary measures to existing poverty reduction strategies (C. Moser & Felton, 2007). The concept of asset accumulation has not only redefined the approach to poverty related challenges but has also led to new discourses on poverty reduction strategies.

Studies have found that the sustainable livelihood framework and asset building framework, which are both poverty reduction strategies with similar challenges, result in varying outcomes (Dani & Moser, 2008; C. Moser & Stein, 2011; M. Sherraden & Sherraden, 2008; Signe-Mary & Sherraden, 2008). (For a detailed review of literature on asset accumulation, refer to Appendix 3.) Here it is important to highlight the aspect of asset accumulation that differentiates it from conventional social development policies. The principal difference arises in the consideration and understanding of income. It has been widely recognised that assets take care of future consumption and provide security against unforeseen catastrophes. Moreover, assets have a positive impact on an individual’s social, psychological and civic behaviour, irrespective of any external influence on their respective income. M. W. Sherraden (1991) has observed that rich families enjoy or receive more asset based income than labour income. In contrast, poor families rely on transfers as a major source of income, as much of their income comes from wages, salaries and other sources of labour income. Despite this, the accumulation and consolidation of assets for future consumption is neither possible for nor recognised by members of the lower strata of society. Thus, individuals with assets and essential capabilities naturally enjoy a greater degree of social protection and have a higher likelihood of coming out of relative poverty (M. W. Sherraden, 1991). The lack of savings and asset building are major hindrances in the path of lower income families, as they try to come out of poverty in the long run (Schreiner et al., 2001).

Role of Institutions: How Different is Asset Building from Asset Accumulation?

Social protection policies protect vulnerable people from adverse risks and against erosion of assets.

Asset-based social policies aim to create more opportunities for asset accumulation. Thus, the creation of opportunities allows low-income families to accumulate assets and then build assets on their own. In a way this goes beyond the mere concept of savings. In asset building, state level institutional structures are quite important and dominant. Poor families seek help from the state institutional framework to establish a foundation to accumulate assets and emerge out of poverty. This is contrary to the idea of asset accumulation, where individuals are provided opportunities as a means to attain self-insurance. Moser’s asset accumulation framework proposes that access to opportunities helps individuals to earn some marketable assets (Cook, 2007; C. Moser, 2011; C. O. Moser, 2015; Solimano, 2006). This helps develop mechanisms of self-insurance and marketable skills among individuals and communities, enabling them to become more resilient and ultimately, making them less dependent on social insurance to protect themselves against negative shocks. In this process, self-insurance plays a bigger role than a state led institutional framework.

Individuals use different strategies to save and accumulate assets. Much importance has been attributed to the role of social institutions and opportunities that provide space for self-insurance as a means to combat risk and accumulate assets. In the context of climate change, asset accumulation is equally seen as a strategy to build resilience.

The asset-based approach protects the vulnerable against risks and helps in the reconstruction of assets. It provides them an opportunity to renegotiate their entitlements during the reconstruction period, despite social and economic loss and damage, and to improve their capacity and well-being (Cook, 2007; Dani & Moser, 2008; C. Moser & Stein, 2011). It must be recognised that poverty and inequality can become endemic if not addressed, resulting in its manifestation through reconstruction of vulnerability. The asset portfolios of individuals, households and communities determine their adaptive capacity, in relation to avoiding risks, to a great extent.

Summarising the Key Arguments

- Assets are a means of constructing, re-constructing, diversifying an individual’s (or a household’s/ community’s) livelihood base, increasing their capabilities to invest and contribute to individual, household and community well-being.
- Assets exist within embedded social processes, structures and power relationships, which help in

mediating access and the accumulation of their value. The whole process of asset accumulation involves both social institutions and opportunities, which individuals must navigate while developing their own strategies. To some extent, interventions by collective agencies or social institutions are essential as they support low income families to accumulate assets. This helps build a foundation for low-income families to further accumulate assets on their own and emerge out of poverty.

Assessing Costs and Benefits in the Context of Re-settlement and Relocation

There is a global consensus underscoring the need for a comprehensive assessment of the economic, social and environmental costs prior to making any decision concerning relocation. Moreover, possible risk mitigating options need to be examined before deciding on the most cost-effective strategy in the short, medium and long term. Any intervention (say housing) results in both costs and benefits incurred on the people. For instance, Correa (2011) research reflects that resettling people from high risk areas eliminates the costs associated with the emergency and reconstruction phase. However, certain non-monetary costs, such as the lack of livelihood opportunities, physiological and social consequences, and disruption of social cohesion are often overlooked regardless of whether the intervention is beneficial or not.

In many instances, R&R projects are unsuccessful because of inadequacies in the new sites, for e.g., distance from livelihoods and social networks, being socio-culturally inappropriate, lack of community participation. Relocation requires risk mitigation through a well-planned and adequately financed programme that includes elements such as employment generation, assured access to food, improved access to public services, transport facilities, restoration of common properties, and support for community and economic development (Jha, Barenstein, Phelps, Pittet, & Sena, 2010).

The cost assessment frameworks developed by various international development agencies do mention common and desirable outcomes with respect to costs and benefits. A standard protocol is used to identify various elements and (monetarily) quantify them (Cernea, 1999). These primarily include (i) compensation and resettlement costs: loss of land, loss of housing, damage to crops or work related assets, loss of employment, investment to start new business; (ii) public assets: community-level infrastructure; and (iii) non-marketable assets: social cohesion, cultural assets, physiological stability. In some cases, it is necessary

to assess the nature of risks (in a post-resettlement context), inadequate provision of services, lack of institutional support mechanisms and non-recognition (by the state) of informality. It becomes important to assess these various hidden costs, which have a very high incidence among vulnerable populations and are usually under-reported and unrecognised.

Summarising our Approach

Risk is embedded within a larger narrative of urban poverty and regional development dynamics, and risk assessment warrants an approach that acknowledges these complexities. It was therefore decided right at the outset to avoid conventional cost-benefit analysis, which would have led us into the trap of using quasi-quantitative techniques. Using our case sites as settings, we chose, instead, to adopt an asset accumulation strategy towards assessing risk, while also addressing the larger risk-development narrative of the region. Our overall approach can be summarised below:

- Situating the risk assessment approach (all costs and benefits) within the broader theoretical frameworks of urban poverty, accumulation strategies and the capability framework helps us understand structural and specific drivers of negative and positive outcomes and the interlinkages therein.
- Assessing the interfaces between livelihoods, urban informality and regional development dynamics enables us to locate risk in a structural context.
- While exploring development trajectories, attention is paid to the broader developmental pathways of transitions taking place in the urban and rural contexts. R&R is viewed in the context of the dynamics of changing settlements and in their relationship with the city and the region – including understanding the changing forms of the macro- and micro- narratives of development.

The major purpose of this research is to provide a clear and diverse series of results that can inform decision makers and implementers, NGOs and other organisations, civil society as well as the discerning lay reader, and to enable change in attitudes, mind-sets and behaviours. This is a prelude to and a necessary element of changing practice in a context where, unfortunately, many R&R schemes continue to fail miserably when judged against development criteria and principles. The latest field research on decision and implementation across our project geographies has allowed for preliminary identification of outcomes—both positive but mostly negative. New research must operate within

the framework of these results, specify outcomes more clearly and try to move from immediate causes to a more profound understanding of the underlying causes of the inadequate processes and unsatisfactory outcomes, seen from a wider perspective than merely a reduction of hazard exposure. A more nuanced distribution analysis would enable the identification of clear links between programme and policy elements and characteristics of the household/community, thereby enabling the creation of concrete evidence that identifies positively or negatively acting linkages.

Drawing from our earlier research in the course of this project, we have identified certain conditioning factors:

- **From the perspective of the intervention process:** there are various **decision-making processes** behind any intervention (triggers and assessment of alternatives, institutional design, incentive structures built into the project design, top down vs. bottom up processes and mechanisms) that lead to the formation of various **implementation strategies** (operational, flexibilities and innovation). We understand that the outcomes of any intervention depend heavily on these decisions and must therefore be informed by the underlying assumptions and understanding of costs and benefits/ advantages and disadvantages of various processes and mechanisms of such interventions. These processes cannot be understood in isolation from the various stakeholders and actors, whose roles and priorities also need to be understood at the time of design and implementation. The basic hypothesis is that outcomes are, in the short-term, significantly influenced by the nature and form of decision making and implementation processes, and potentially modified over time by pre-existing historical factors and changing conjunctural aspects. There is a potential to identify a typology here of different kinds of decision-making and implementation processes, which will be attempted in this project.
- **Informed by typologies:** after studying various resettlement practices across differing contexts, the research team has formulated a set of **typologies of resettlement drivers**, including preventative, ex-post and climate change induced, and categorised them according to the experience of risks. Certain key characteristics of existing settlements have also been identified, which can give clear policy direction in the context of resettlement decisions—particularly urgent at the time of post-disaster corrective action.

Risk Assessment Framework: India

The risk assessment framework for the present research has been derived from a larger cross-regional framework (see Appendix 4), to make it relevant to the Indian context and the current set of sites in particular. There are two levels of analysis:

The perspective of the individual household or neighbourhood: Our approach to examine costs and benefits, within the category of households and/or neighbourhoods, involves an investigation of the following:

- People often find ways of coping (accumulating assets) with various external hazards over time, and therefore may not consider them as being risky. We examine the nature of these assets and how they are linked (in what ways and under what conditions) with the context of risk reduction. **Potential assets** could be socio-cultural (health, education, social safety nets, networks, family extensions, community structures, cultural practices); physical (buildings, systems, land, public spaces, trees and natural capital, productive and non-productive assets, food); economic (livelihood options, access to financial services, investments, risk transfer and sharing mechanisms); environmental (quality and quantity of water, air, green cover, biodiversity); political (agency and voice); and overall quality of life determined by their levels of access to various assets.
- People's **existing risks and opportunities** need to be understood in the context of their assets and associated accumulation strategies, particularly in their spatial context. Further, for any potential intervention to work, it needs to be understood which of these existing risks have been or will be reduced (**avoided risks seen as benefits**), and which opportunities may get ham-

pered and turn into **new risks as costs** for them. These new risks also need to be understood in the context of a changing climate that could potentially introduce new unknown risks in the future. Other than these, **continuing risks** (vulnerabilities and exposures) can be understood as a lost opportunity, i.e. opportunity costs that could have been avoided with alternate interventions. A comparison between costs and benefits borne by people can offer insights into the advantages and disadvantages of any potential intervention.

From the perspective of the city: the city as a whole has a relationship with the people living within it as well as other on-going processes of urbanisation. Any intervention, therefore, must also be based on an overall **vision** for the city's development, informed by **its history**. People tend to have a give-and-take relationship with their environs in terms of **flow of resources, livelihood extensions** and other **social and political dependencies**, and any alterations to these must also be understood as costs, both to the city as well as households, unless they can be recreated post the intervention. The city's overall **opportunity cost of land, pressures on infrastructure provisions and environment** must also be understood as costs to the city when comparing the costs borne by people versus those borne by the city.

Furthermore, for any potential intervention, we need to understand the **avoided risks as benefits**. Specifically, if a risk reduction initiative is undertaken (in this case initiatives could involve R&R, upgrading or infrastructure improvement, or land management which leaves highly-exposed areas under-developed in the future) what would be the avoided risks for the city and its residents? These can be understood as a series of costs avoided (for e.g., disaster losses avoided, response and recovery costs not incurred) as well as a series of monetised

benefits (for e.g., ecosystem services). Our analysis focusses more on some of the elements identified above while investigating the dynamics (including the political economy of development) from a limited context of livelihood situation, land and infrastructure development and its provision.

In the context of risk assessment at the city/regional level, we have chosen a twin-approach. At the first level, we examine the level of risk that people and systems are exposed to, using the most authentic data sources. This enables us to situate the existence of risk in a historical and spatial context. We argue that there are serious endemic deficits in key social, environmental and economic assets, which are largely driven by non-inclusive processes of development or the inability of the state to deal with risks (from a broader, regional perspective), partly driven by the structural changes that the Indian economy is facing and the dynamic transitions involved (agriculture to manufacturing to services-led economy). We use the city-framework to illustrate serious deficiencies in individual and system capabilities to address shocks or endemic stresses (like poverty). We argue that, partly because of lack of convergence in regional development and clustered economic development activity—and the imbalances in regional development—certain regions/cities will continue to be in a state of constant flux, with the creation of new risks as people migrate to the city in search of livelihoods, and the challenge of providing them with a decent quality of life.

This leads us to the second approach, where we use the example of the city of Visakhapatnam to illustrate how city development processes (when faced with challenges of supporting a more than desirable quantum of human population) are unable to respond effectively in the context of risk management. By doing so, we argue that asset accumulation cannot be looked at in isolation from the ability of individuals to do so, unless the city development process addresses the opportunity gap (in its various forms) through risk-focussed development strategies. This, we argue, would result in serious erosion of the individual's/community's ability to respond to environmental stresses and shocks. Moreover, unless we address the fundamental blocks of development processes in the most inclusive manner, we will be unable to address risk-development exposure (which goes beyond hazard exposure) in an effective manner.

Risk Assessment at City/Regional Level

People tend to live in the regions that are economically advantageous for them but not because it is classified as 'urban'. McGranahan and Satterthwaite (2014) indicate that urbanization and economic development are interrelated. In the past cities developed near the water sources (sea or river) or along transport/trade corridors but in the last few decades, urbanization is happening where large industries and investments congregate. People migrate from the less developed regions to the cities for better livelihood opportunities and improved access to services. It is a rational choice made by these people as it is economically advantageous. In developing countries, because of skewed regional development outcomes, such migratory behaviour is more visible.

Although migrant workers who are part of the informal sectors are an important asset for the economic growth in the urban areas, the city government see these migrants and the informal settlements as burden and assess informality as costs created in terms of incremental urban congestion, availability of limited resources and service provision capacity (McGranahan & Satterthwaite, 2014). They fail to recognize that a large majority of urban informality underwrite huge urban social costs (for e.g., the waste management industry is fairly unregulated in many Indian cities and informal settlers derive individual and collective value from waste and at the same time, offer unpaid sanitation services).

Migrants, who are skilled or educated get into formal jobs and get access to decent housing and services. Some of the migrants, those who have poor capabilities or low asset base, based on the work that they get involved, settle in the marginal locations that are in proximity to their work locations. As most of these neighbourhoods are located in illegal lands and violate the building codes, the local governments use plans and development controls for to effect evictions. Currently

there is no policy or plan that protects these settlements or guides their legal eviction (Tacoli, McGranahan, & Satterthwaite, 2008) McGranahan, & Satterthwaite, 2008. There is a paradox here in that while the proximity of such settlements is of immense advantage to the industry or service activity in providing services at competitive rates, at the same time, the settlements themselves are unauthorised.

Lack of access in these settlements to services, infrastructure and formal livelihoods is an indicator of poor governance. Migrants, despite not being part of the formal sector, do contribute to the urban economy and their contribution cannot be ignored. Satterthwaite and Tacoli (2003) point out that local governments are not accountable by the rule of law to support the needs of poorer groups. For a city to be productive and benefit from migration, it needs to promote inclusive development. Currently, all development plans and policies are prepared and implemented within the administrative boundaries. However, with rural and urban regions extending into each other, issues such as poverty and migration cannot be viewed as urban or rural specific issues. It is clear that urban and rural areas are interdependent and therefore better distribution of income generation activities and services across them can help improve overall regional development, reduce poverty at the regional level and reduce the stress on urban areas. In the present scenario, with policies and plans that focus on the concentration of employment opportunities in urban centres, the result is deeply entrenched urban poverty and stark inequalities. Satterthwaite and Tacoli (2003) suggest that urban policies and plans be aligned with macro-economic strategies of the local and national government, which will benefit both rural and urban populations. It is also important to note that regional development, in the Indian context, has largely remained an inequitable process. Key economic and social development

policies have not laid adequate emphasis on improving fundamental capabilities and asset enhancing possibilities. This has skewed the ability of an individual to respond to livelihood concerns. Distinct inequalities are visible in the human, physical and economic development indicators between different regions of the same federally administered state. While there are bound to be disparities in resource endowment, we argue that, provided the state proactively engages in building key capabilities and constructing asset enhancing opportunities, the rural–urban flux could counter regional imbalances. The failure to do this has resulted in over-populated cities, a crisis in city functionality and persistent existence of risks.

Regional Context of Odisha and Andhra Pradesh

The state of Andhra Pradesh has better health (and education) indicators as compared to the national average, while Odisha fares much worse.

It is evident by looking at the variation in developmental indicators of the two states between 2001 and 2011,

that while overall health and education indicators seem to be improving across the two states, the number of people living in slums and those with access to infrastructure and services is constantly and dramatically increasing. This is an indication of inherent and worsening structural problems in both these contexts.

Taking illustrative cases of three major cities in each of the two states, two issues become clear. On the one hand, with the manifold increase in slum populations, an increasing number of people have limited access to a source of clean drinking water and are therefore more prone to diseases. On the other, access to assets, sanitation services, electricity and banking services has improved proportionally. All the same, the increasing burden on available resources may have a detrimental effect on the developmental gains made by various other investments in health and education outcomes, and must therefore be addressed on priority, without adversely affecting other developmental requirements such as access to livelihoods and other social services.

Table 1: Health Indicators for Andhra Pradesh and Odisha

Indicators	Andhra Pradesh	Odisha	India
Infant Mortality Rate ^[1] (SRS 2013)	39	51	40
Maternal Mortality Rate ^[2] (2010–12)	110	235	178
Total Fertility Rate ^[3] (2012)	1.8	2.1	2.4
Crude Birth Rate ^[4] (SRS 2013)	17.4	19.6	21.4
Crude Death Rate ^[5] (SRS 2013)	7.3	8.4	7
Natural Growth Rate ^[6] (SRS 2013)	10	11.3	14.4
[1] The infant mortality rate is the number of deaths under one year of age occurring among the live births in a given geographical area during a given year, per 1,000 live births occurring among the population of the given geographical area during the same year			
[2] The maternal mortality rate refers to the number of deaths from puerperal causes occurring among the female population of a given geographical area during a given year, per 100,000 live births occurring among the population of the given geographical area during the same year.			
[3] The total fertility rate in a specific year is defined as the total number of children that would be born to each woman if she were to live to the end of her child-bearing years and give birth to children in alignment with the prevailing age-specific fertility rates			
[4] The crude birth rate is the number of live births occurring among the population of a given geographical area during a given year, per 1,000 mid-year total population of the given geographical area during the same year.			
[5] The crude death rate is the number of deaths occurring among the population of a given geographical area during a given year, per 1,000 mid-year total population of the given geographical area during the same year.			
[6] Natural Growth Rate is the crude birth rate minus the crude death rate.			

Figure 1: Crude Birth Rate (1971–2011) for Andhra Pradesh and Odisha

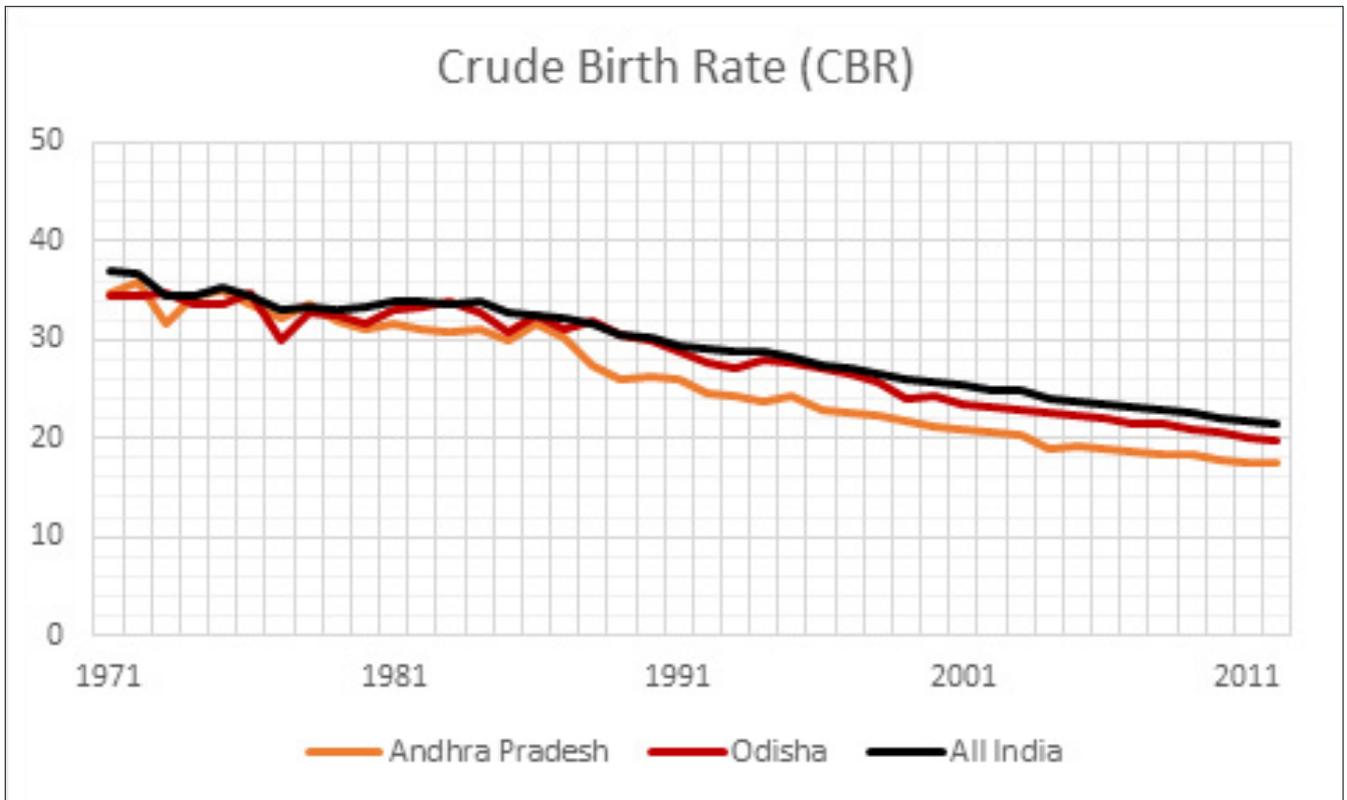
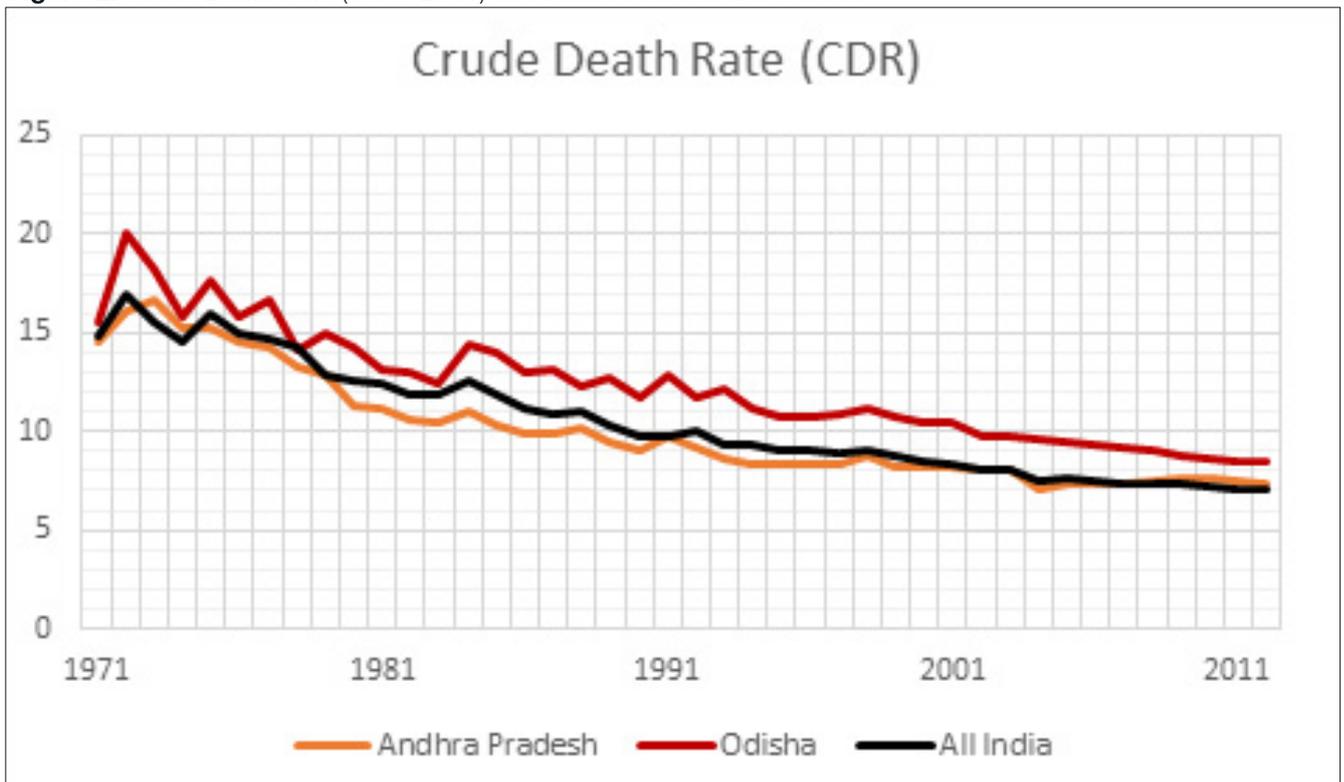
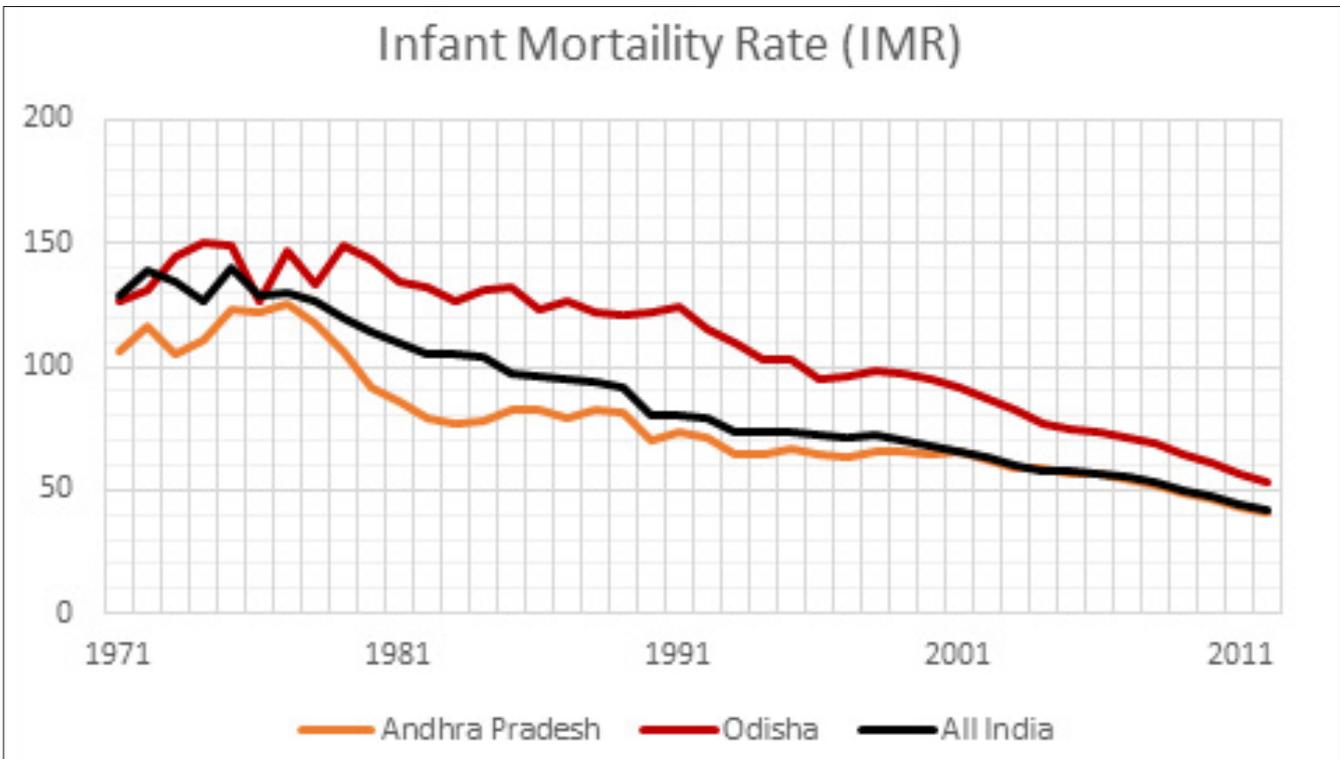


Figure 2: Crude Death Rate (1971–2011) for Andhra Pradesh and Odisha



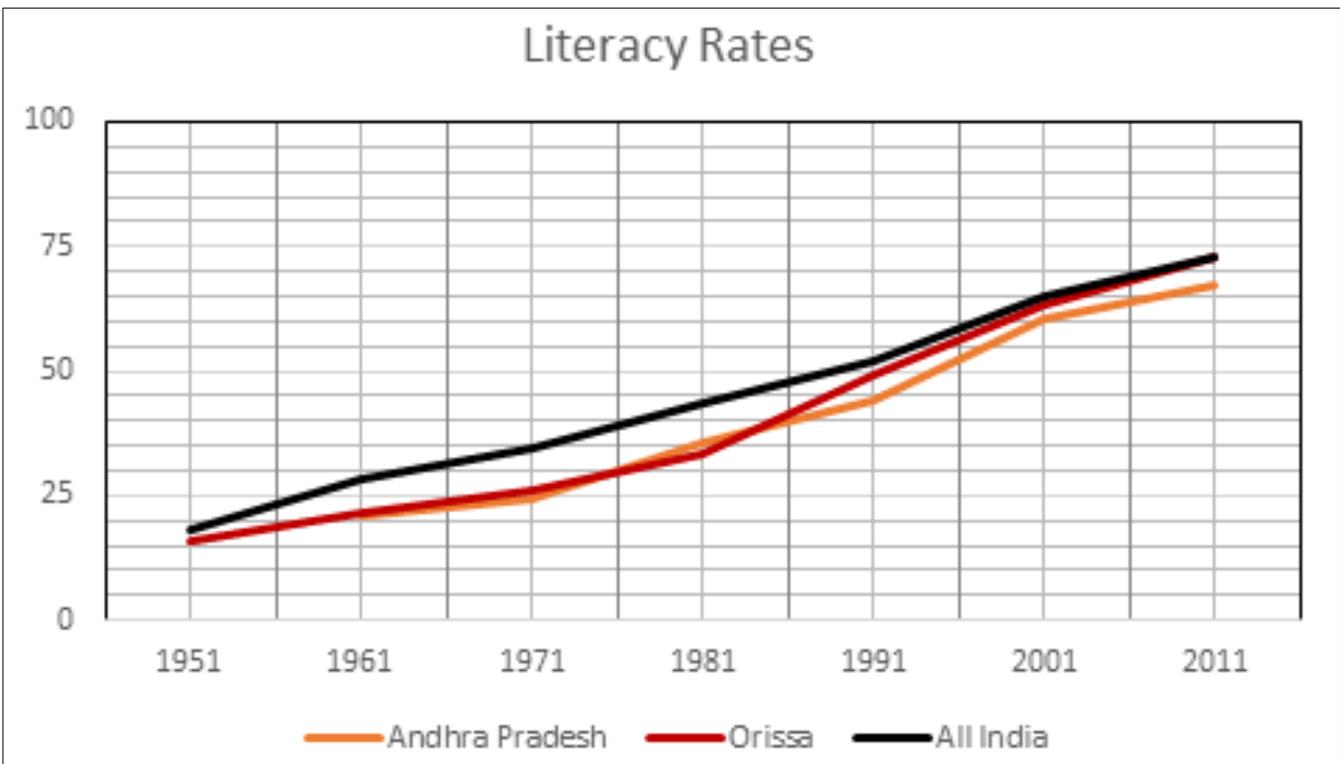
Sources (Figure 1,2) :Basic Health Parameters (CBR, CDR & IMR): State-wise Time Series Data, Planning Commission

Figure 3: Infant Mortality Rate (1971–2011) for Andhra Pradesh and Odisha



Sources: Basic Health Parameters (CBR, CDR & IMR): State-wise Time Series Data, Planning Commission

Figure 4: Literacy Rates (1951–2011) for Andhra Pradesh and Odisha



Source: State-wise Literacy Rates (1951 to 2011), Planning Commission

Table 2: Slum Population (2001, 2011) in Six Major Cities in Andhra Pradesh and Odisha

Name of the City	State	Slum population (2001)	Slum population (2011)
Greater Visakapatnam (MC)	Andhra Pradesh	170,265	770,971
Vijayawada UA	Andhra Pradesh	263,393	451,231
Guntur UA	Andhra Pradesh	170,007	266,500
Bhubaneswar UA	Odisha	71,403	163,983
Berhampur Town (M Corp.)**	Odisha	111,943	117,541
Cuttack UA	Odisha	93,910	163,766

Source: Census of India (2001); Census of India (2011); **http://www.berhampur.gov.in/Demographic_Feature.asp

Table 3: Population with Access to Tap Water (2001, 2011) in Six Major Cities in Andhra Pradesh and Odisha

Name of the City	State	People with no access to tap water (2001)	People with no access to tap water (2011)
Greater Visakapatnam (MC)	Andhra Pradesh	75,288	147,003
Vijayawada UA	Andhra Pradesh	45,720	44,569
Guntur UA	Andhra Pradesh	16,050	14,619
Bhubaneswar UA	Odisha	60,752	92,741
Berhampur Town (M Corp.)	Odisha	19,655	24,021
Cuttack UA	Odisha	31,415	38,424

Source: Source: Census of India (2001); Census of India (2011)

Visakhapatnam

Visakhapatnam is the largest and most populous city of Andhra Pradesh and serves as the district headquarters of Visakhapatnam district. It is an important port and industrial town located midway between Chennai and Kolkata on the east coast. The city is also home to the Eastern Fleet of the Indian Navy. The Greater Visakhapatnam Municipal Corporation, with nearly 4 lakh households, is divided into six zones and 72 administrative wards.

Regional Context and Economic Importance

Visakhapatnam is well connected by all modes of transport—it has an airport, two major ports, Gangavaram and Visakhapatnam ports, located on the Chennai–Kolkata Golden Quadrilateral rail and road networks. The city hosts major industries like the Visakhapatnam Steel Plant, Hindustan Shipyard Limited, HPCL Oil Refinery, Bharat Heavy Electronics Limited, NTPC Simhadri Project and many small to medium scale industries. A major Special Economic Zone (SEZ) spanning more than 5,000 acres is located to the south of the city near Pudimadaka. As of 2011, there are nearly 2,500^{*} industries in the city of Visakhapatnam.

Visakhapatnam is also a major educational hub in the region. Andhra University is one of the oldest universities in the country. A new Indian Institute of Management (IIM) was established in the city in 2015. Along with these, there are nearly 1,400 government and private education institutions that attract students from across the state and several parts of the country.

The setting up of the Visakhapatnam Port in 1933 and Visakhapatnam steel plant are some of the important milestones in the history of the city economically. Visakhapatnam is a major port on the east coast between Chennai and Paradip. The port attracts most of its exports from the mining areas of Odisha and Srikakulam. Along with this it is to be developed as an IT and financial hub in the state. It is one of 20 cities selected for development under the Smart Cities Mission.

Other than Kakinada in east Godavari, none of the surrounding districts have any major economic centres, because of which Visakhapatnam city attracts a lot of migrants. Visakhapatnam has an estimated 741^{**} slums and according to the Census of India (2011), 44 per cent of its total population lives in these slums. The city's

Table 4: Visakhapatnam City Profile

Area	544 sq km
Number of Wards	72
Population (2011)	1,728,128
Population Density	3,177 persons/sq km
No. of Households	439,335
Total Working Population	612,221 (%)
No. of Slums	735
Slum Population	770,971 (44%)
Water Supply (2013)	250 mld
Road Network (2013)	3,589 km
Sewerage Network (2013)	1,246 km
Source: Census of India (2011); Greater Visakhapatnam Municipal Corporation	

slum distribution map reveals that that these settlements are small and scattered across the city.^{***} To provide housing, more than 15000^{****} dwelling units were built in the city as part of the Basic Services to the Urban Poor (BSUP) project under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). However, most of these new housing projects are located in the outskirts of the city.

The following maps and graphs indicate how the city has been sprawling in the last decade, despite which housing programmes tend to be built on the outskirts of the city to avoid densification of the centre. There are also indications that both the daily maximum and minimum temperatures have been increasing over the last 100 years in the area, but the planning visions or propositions (such as the recent Smart City Plan for the city) do not seem to recognise this fact (or its implications) while charting the new ways forward.

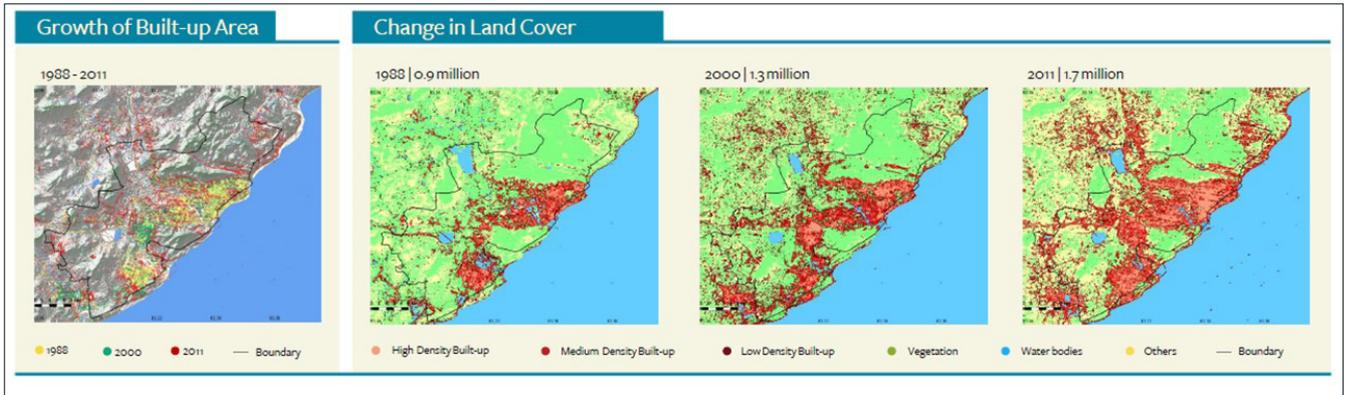
* http://gvmcdm.org/data0/RMSI_draft.pdf

** <http://smartcities.gov.in/writereaddata/winningcity/Vishakapatnam-Annexure.pdf>

*** http://gvmcdm.org/data0/RMSI_draft.pdf

**** <http://www.gvmc.gov.in/gvmc/index.php/jnnurm-projects-progress-at-a-glance>

Image 1: Maps showing increasing sprawl in the city of Visakhapatnam



Source: Geospatial Lab, IIHS

Image 2: Locations of the proposed and some recently constructed housing projects (along with the number of housing units in each location) indicating more outward-growing sprawl

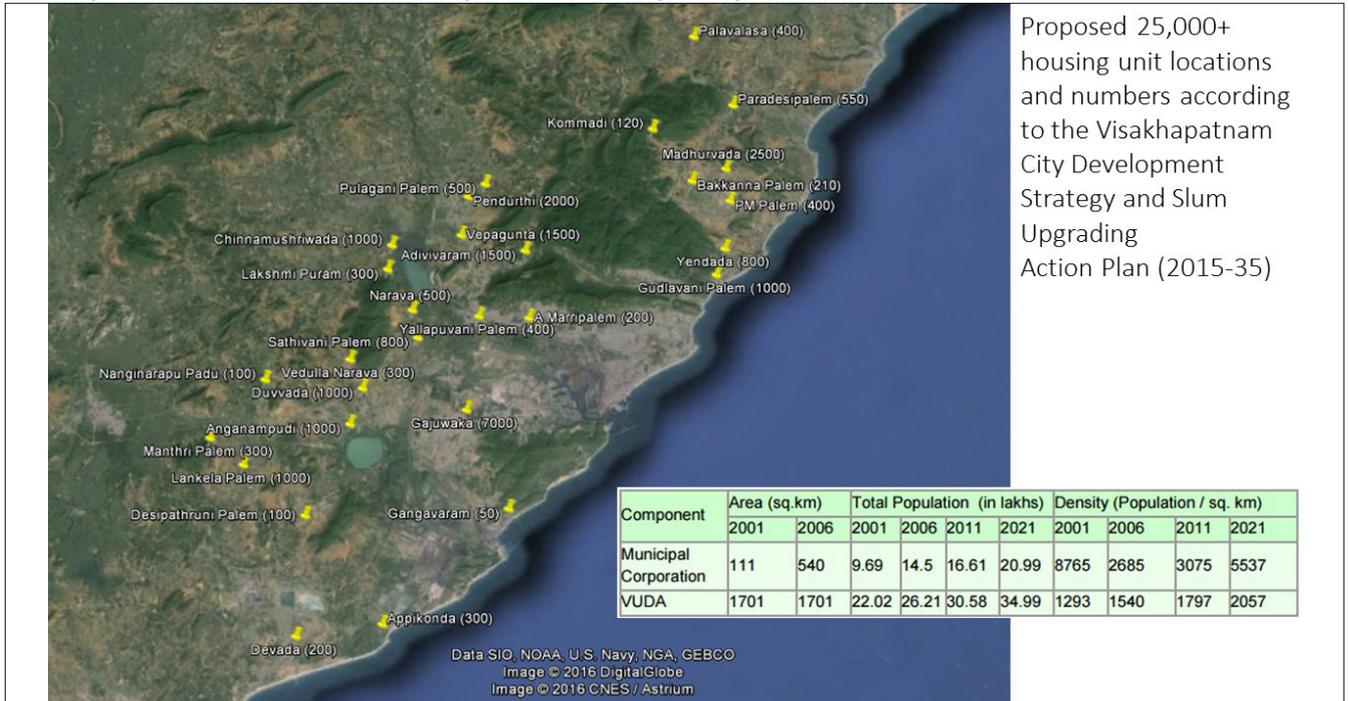
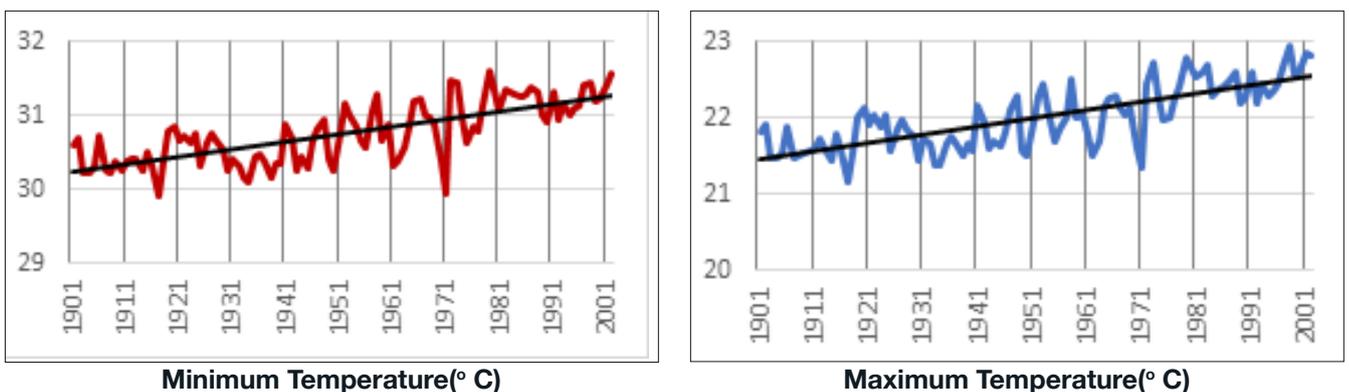


Figure 5: Changing Temperature Trends in Visakhapatnam district Over the Last 100 Years



Source: Indian Meteorological Department

Ganjam District

Ganjam district is one of the southern districts in the state of Odisha, with Chhatrapur as its headquarters. It shares its border with Srikakulam district in Andhra Pradesh. It is surrounded by the districts of Gajapati, Kandhamal and Nayagarh. Ganjam witnessed nearly 40 per cent growth in its urban population between 2001 and 2011. Berhampur city, with a population of more than 3.5 lakh, is one of the major urban centres of the district. As per the 2011 census, agriculture and fishing are the major economic activities in the district. Ganjam district hosts the Gopalpur Port, one of the new commercial ports on the east coast.

Of the total number of workers, 59.98 per cent are main workers and 40.02 per cent are marginal workers (Census of India, 2011). However, in the last decade, the share of agricultural labourers in the workers' category has decreased by nearly 1 per cent and the share of other workers has increased from 25 per cent to nearly 40 per cent (GoO, 2013).

Berhampur is the largest urban area and the only municipality in Ganjam district. Spread over an area of 87 sq km, it has a population of nearly 3.5 lakh. Berhampur's proximity to the major ports of Visakhapatnam, Paradip and Gopalpur makes it one of the major hubs in southern Odisha.

Regional Context and Economic Importance

Ganjam contributes 7.14 per cent of the state's Gross District Domestic Product (GDDP) (current prices 2009–

Table 5: Ganjam District Profile

Area	8,260 sq km
Population (2011)	3,529,031
Population Density	431 persons/sq km
No. of Subdivisions	3
No. of Blocks	22
No. of Tehsils	23
No. of Municipal Corporations	1 (Berhampur)
No. of Inhabited Villages	2,838
No. of Households	758,267
Population below the Age of 6 Years	420,158
Literate Population	2,210,050 (62%)
Total Working Population	1,501,772 (42%)
Source: Census of India (2011)	

10) and ranks third in the state. Majority of livelihoods in the district depend on agriculture and fishing. According to the district's 2012 Statistical Abstract, nearly 40 per cent of all workers are involved in agriculture. With a long coastline and backwaters, Ganjam has a lot of fishing resources and dependent livelihoods. Kewda farming is one of the major livelihoods in the district. Given the importance of agriculture, fishing activity and the availability of minerals in the district, agro-based, food processing and mineral based industries are prominent in the district (NIC, 2016).

Lot of people here migrate to other parts of the country for work and this seems to have had a substantial positive impact in terms of family income, reduction of debt, networks, skills, education and other development indicators (GoO, 2013).

Berhampur is a major trade centre in the district. Located between Bhubaneswar and Visakhapatnam, and known for its spices and cloth markets, it has been nicknamed the "Silk City." It is home to major industries like Indian Rare Earths Ltd (IREL), TATA SEZ, Gopalpur Port, with several educational institutions like the Army Air Defence College and Berhampur University in its vicinity. Berhampur is connected by the Golden Quadrilateral network and is located on the Kolkata–Chennai Highway and trunk line. With its well-connected transport networks it acts as a transport and trading hub for nearly eight districts in Odisha. Gopalpur, located on the coast, is a major tourist destination near Berhampur.

Table 6: Berhampur City Profile

Area	87 sq km
No. of Wards	32
Population (2011)	356,598
Population Density	4,098 persons/sq km
No. of Households	74,720
Population below the Age of 6 Years	32,174
Literate Population	289,590 (81%)
Total Working Population	120,553 (35%)
No. of Slums	137
Slum Population	91,893 (26%)
Water Supply (2009)	50 mld
Road Network (2009)	385 km
Sewerage Network (2009)	487 km
Source: Berhampur Municipal Corporation (2009); Census of India (2011)	

Risk Assessment at Settlement Level

Methodology and Scope

The objective of this analysis is to understand the costs and benefits borne out of the intervention at the settlement level, by agglomerating household level survey information. The level of risk has been assessed based on the extent of asset ownership before and after the intervention, in terms of social, economic, physical, environmental and quality of life indicators.

With each indicator, any decrease in the level of risk to a certain asset is considered a benefit. If it wasn't a risk to begin with and no risk has been created in the course of the intervention, it amounts to a benefit in the form of **risk avoided**. If a risk continues to exist for their asset even after the intervention and no action was taken towards improving their accumulation strategy, it is a **lost opportunity** and therefore a cost. **New risks created** in the course of an intervention are also considered costs. Any change in status quo is measured based on clear responses elicited from people during household surveys, focus group discussions, interviews and other secondary information.

There were 7 types of respondents surveyed as described in the Site Reports Section I, II and III. Responses from the Type 2 (In-situ housing), Type 3 (Relocation in process) and Type 4 (Relocated) respondents are considered for risk assessment post intervention and responses from all types of respondents are considered for assessing the existing levels of asset accumulation and thereby levels of risk before intervention. Along with the settlement level analysis, the experiences of vulnerable groups/households are also noted in order to highlight their outcomes, which are likely to be different from the others.

The temporal dimensions of risks (short-, medium-, and long-term) are not investigated as the primary work in

the selected sites only provided data and understanding of the present context and is not suitable for analysis of the risk spectrum.

Site Selection Criteria

The interventions in all the sites under the study were divided into three broad categories, based on the aim of each intervention: i) moving risk, i.e. using structural measures to reduce hazard risk and vulnerabilities, albeit in the same location; ii) moving people, i.e. relocation of families from high risk areas; or iii) a combination of both. The following table shows these three categories and the sites that fall under each.

We have shortlisted the sites where project implementation is complete or is in process, to understand the various decision making and implementation processes involved and their impact on the outcomes of the intervention. Since the projects in urban Andhra Pradesh and rural Odisha are in their implementation stage, sites in these regions have been shortlisted for assessment.

To understand the outcomes and differences between: relocation and in situ upgradation; voluntary and forced relocation; participation and lack of it; coastal and inland locations; implications on various types of livelihoods, the following sites are selected for settlement level risk assessment: **Sonia Gandhi Nagar, Sevanagar, Paradesipalem in urban Andhra Pradesh; and Markandi, Upallaputti-Basanaputti, Devi Nagar (relocation site) in Rural Odisha.**

The following section discusses the results of the risk assessment exercise conducted in the select settlements, from the household perspective, by looking at asset accumulation and risks (represented in

Appendix 5). Brief descriptions of the post intervention outcomes at the site level have been listed below.

categories (in line with the objectives outlined above, see Appendix 5)- which yielded clear trajectories in the risk

Type of Intervention	Proposed/ Pre-Intervention				In-process /Complete			
	Andhra Pradesh		Odisha		Andhra Pradesh		Odisha	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
A. Moving Risk (In situ housing or infrastructure upgradation)			CST BHS		SGN			MRK BRP RGN
B. Moving People (Relocation or Resettlement)		PUD	KHS PPN		SEV PAP VMB			UPB
C. Combination of A and B	JAL ASR		ROS					DLR KNK

Summary of Findings

Before discussing the results, it would be pertinent to summarise some of the key objectives that we had set out with, while understanding R&R in the context of climate change and urbanisation.

These were:

- To evaluate, in the context of individual cases, the experience of socio-cultural and economic implications of R&R.
- To assess the structural and non-structural drivers of risk while interrogating the experiences of living in the original and resettled contexts, based on the two questions:
 - Is there sufficient evidence to indicate the failure of the development processes in eliminating experiences of risk (poverty, informality)?
 - Is there sufficient evidence to indicate the experience or non-experience of political agency and individual/household capabilities?
- To find, in the context of risk, the key dimensions that are critical in terms of building adaptive capacities, leading to beneficial outcomes or enhancing the overall well-being of a household/ community?
- To investigate whether there is sufficient evidence to locate the risk within the broader agenda of urban poverty, allowing for household accumulation strategies and strengthening of adaptive capacities?

We organised primary data across Socio-cultural, Physical, Economic, Environmental, Quality of Life

continuum, identified critical disjoints, provided a lived understanding of the implications of R&R and helped in providing macro and micro development narratives. Some of the key findings are summarised below:

- We found clear evidence of collective action arrangements (informal safety net collectives, women’s groups enabling the exercise of rights, local development committees) and their profound impact in terms of reducing risks. We also observed that the factors that enabled the formation of such innovative collectives and groups also play a positive role by acting as a buffer against residual risk, most significantly, in terms of negotiating the impact of economic or environmental shocks.
- We also found sufficient evidence to indicate the lack of social infrastructure provision (health and education) as a critical impediment to building adaptive capacities of households, particularly in the inter-generational context (lack of appropriate health facilities, greater prevalence of health hazards, lack of safe access to educational opportunities). For e.g., the experience of poor health and educational could seriously impair the adaptive capacities of young inhabitants of the resettled/ affected households.
- The lack of access to employment opportunities within affordable distance, and disruption of economic activities (many households rely on extended social networks to support profitable micro-enterprises) was a common problem experienced across settlements, except in cases where the distance was minimal. This is evident of the inappropriate structural arrangements that can threaten the economic security of the affected people and their livelihoods. This problem

is endemic to urban contexts, underscoring the deep-rooted, multi-layered nature of poverty, which is manifested during structural transformations in many city locations that we studied. This tends to result in a reduction in the capacity of households to accumulate assets or to adopt other accumulation strategies to manage risk.

- There was a clear lack of imagination within official discourses addressing regional development processes, with respect to the experience of risk in a regional context—unviable agriculture, unbalanced regional development, etc. This points towards the inability of official narratives to address the structural challenges of reducing poverty and generating livelihoods while supporting a large population base.
- We also found that skill building (offered as a bundled product with relocation decisions) can help diversify livelihood opportunities for affected people. The provision of such enablers, like skill training and access to financial services, benefit affected communities in two critical ways: by improving their chances of asset and related accumulation strategies (through sustained income opportunities), and by strengthening their adaptive capacities, offering a much wider possibility of negotiating rights and opportunities and thereby contributing towards enhancing the political agency of the individual/household. Such skills make possible a better choice matrix and better negotiating terms.
- We observed a clear linkage between the structural strength of new houses, environmental services (like water and sanitation) and quality of life. While overall the new houses were structurally strong (and therefore able to provide protection in case of cyclonic storms), poor provisioning of environmental services led to poor quality of life outcomes. It is essential to recognise that the absence of appropriate provisioning of infrastructure services creates its own cycle of informal infrastructure provisioning—eating into the economic and asset base of households. This vicious cycle creates an endemic and endogenous poverty trap, which gets exacerbated through the larger, highly inequitable development trajectories. It is important to guard against a situation where economic opportunities that are created through larger development processes are left untapped by the vulnerable population because of their poor capabilities (such as poor asset and economic base).
- We also found a strong correlation (in simple analogous terms) between effective official institutional frameworks (such as an efficient public food distribution system, accessible financial institutions, dedicated skill training programmes) and better economic, socio-cultural, political and environmental outcomes for affected households/settlements. It clearly follows from this insight that we need to redesign existing institutional arrangements that focus on the eradication of urban poverty as their central mission (both structurally and non-structurally) and continuously re-invent them with the changing dynamics of regional development processes.

Outcomes/ Site	Cost/ Benefit	Socio-cultural	Physical	Economic	Environ- mental	Quality of Life
Markandi	Risk reduced/avoided as benefits	Traditional skills, informal safety nets, active neighbourhood collectives, women's empowerment, safety and psychological risks	Structural stability, scope for modifications and customisation, plot size, piped water supply, toilets, sewage waste disposal, electricity supply, continuity of social infrastructure and public spaces, additional cyclone shelter	Proximity to work, mason training programme, bank accounts, multi-hazard insurance	Access to natural resources—sea, river	Public distribution system (PDS)
	Continuing risk as opportunity cost	Health facilities, quality education, dropouts, female literacy, anganwadis, access to entitlements	Solid waste disposal system	Bigger boats instead of houses for better income and reduction of everyday risks, improved canal system, asset based insurance	Saline groundwater	Access to basic services—public transport, schools, hospitals and markets
	Risk created as cost	None	None	None	Waste disposal/sea contamination, clearing of forest land for construction	
Devi Nagar	Risk reduced / Avoided	Knowledge of entitlements, women's empowerment, distance to nearest health centre	Structural stability, Scope for modifications and customisation, plot size, piped water supply, toilets, electricity, cement roads, VDC, O&M funds, land + house	Access to bank accounts, marketable and non-marketable assets, multi-hazard insurance	Solar water pumps	VDC, allocation of houses to disabled/widows
	Continuing risk	No skill training, high dropout rates, female literacy, use of toilets, especially by men	Solid waste disposal system, use of firewood for cooking outside the house, social and critical infrastructure—school, hospital, temple, cyclone shelter, early warning systems	Asset insurance, mason training programme, no savings	Monkey menace at horticulture farms, contaminated water because of IREL factory	Mixing of high and low caste communities, access to education, public transportation, possible rise in dropout rates, access to entitlements for old family members

Devi Nagar	Risk created	Cultural practices, no ponds, temples, etc. created, physiological risks, women's safety, division of families and community, loss of social safety net, distance to work and community assets, no anganwadi	Poor quality of ground water, lack of public spaces and play areas for children, no community assets, i.e. trees, land, etc.	Distance to work (from TATA factories and horticulture farms), social networks, community owned assets, informal networks, women stopped working because of distance and are now dependent	No green cover/trees	Access to adequate health services—TATA free medical services may not be available, access to public spaces
Uppalapatti	Risk reduced /averted	No new health risks, knowledge of entitlements, women's empowerment through house titles in their name, safety from cyclone, psychologically safer.	Structural stability, scope for modification and customisation, plot size, piped water supply, toilets, electricity, cement roads, VDC, O&M funds, land + house, hazard risk	House ownership, bank accounts	No change in air and water quality	Access to entitlements
	Continuing risk	Professional hazards (fishing), skill training, dropouts, quality of education, lack of safety, incomplete relocation leading to people having to inhabit damaged houses even after 2 years	Water quality, solid waste disposal system, solar electricity, public transport	Diversity of income, no skill training, no savings, asset insurance	None	Access to quality health care, PDS centre
	Risk Created	Distance to nearest health centre, distance to school, increase in (especially female) dropout rate, family support structure, no anganwadi, interruption of cultural practices, no ponds, temples, etc. created, physiological risks including women's safety, division of families and community, social safety nets, no anganwadi, relocation with other villages, castes and communities	Contamination of ground water by IREL factory, no social and critical infrastructure—school, hospital, temple, cyclone shelter, early warning systems, distance to public transport, no public spaces or play areas for children, no community assets—trees, land, etc.	Access to work (sea), travel expenses, moving from multiple earners to single earners within households, access to assets—boats, etc., informal networks, safety net	No tress/ green cover/ access to natural capital	Access to schools and public spaces, public transportation

Sonia Gandhi Nagar	Risk Reduced /Avoided	Informal safety nets, networks, neighbourhood relations, cultural practices, psychological safety, toilets for women, women's empowerment, anganwadi	Strong house, toilets and septic tanks, electricity connections, gas connections, roads and transports networks, early warning systems, social and critical infrastructure	Multiple earners and no change in access to work, access to bank accounts, increase in marketable and non-marketable assets, house ownership, access to informal networks and access	No change in water quality and impact on health, access to trees/green cover	Access to public transport, entitlements, public spaces, PDS
	Continuing Risk	Skill training, female literacy, dropouts	Piped water supply, safe play areas, solid waste management, no solar options for water and electricity	Informal economic activities, no savings and insurance	Located next to highway, highly dependent on ground water,	Access to education, quality health care
	Risk Created	Breaking of families, elders are now become independent, no transit housing	Size of the house	None	None	None
Sevanagar	Risk Reduced / Avoided	Women empowerment, community moved as a whole, toilets for women, perception of safety from cyclones	Strong house, Piped water supply, Toilets and Septic Tanks, electricity connections, gas connections, roads,	Access Bank accounts, house ownership,	None	None
	Continuing Risk	Skill training, dropout rate, female literacy	Safe play areas, Solid waste management, no solar options for water and electricity, early warning systems, social and critical infrastructure	Informal economic activities, insurance, loss of income due to loss of networks	Access to trees/ green cover, depended on ground water,	None
	Risk Created	Increase in health expenditure, disease incidences, informal safety nets and networks, safety for women, quality of education, access to schools, alcoholism	Size of the house/space,	Multiple earners to single earners, informal safety nets and networks, savings	Poor water quality and its health impacts, foul smell, poorly maintained drains, septic tanks, animals—snakes, pigs, etc.	Provision of public transportation to access workspaces, education, public spaces, PDS, health facilities
Paradesipalem	Risk Reduced / Avoided	Women's empowerment, community moved as a whole, toilets for women, perception of safety from cyclones	Strong structure of house, piped water supply, toilets and septic tanks, electricity connections, roads	Access to bank accounts, house ownership, informal networks	None	None

Paradesipalem	Continuing Risk	Skill training, dropout rates, female literacy	Safe play areas, solid waste management, no solar options for water and electricity, early warning systems, social and critical infrastructure, gas connections	Informal economic activities, insurance, loss of income due to expenditure on travel, savings	Access to trees/green cover, dependence on ground water	None
	Risk Created	Increase in health expenditure, incidence of disease, safety for women, quality of education, access to schools	Streetlight, access roads, size of the house/space	Multiple earners to single earners	Poor water quality and its health impacts, air quality, poorly maintained drains, septic tanks, animals—snakes	Provision of public transportation to access workspaces, education, public spaces, PDS, health facilities

Ganjam District (Rural)

Markandi

Markandi is a coastal village with three different communities—the fishing community; Reddys, who are traditionally landowners and practice agriculture; and Beheras, who belong to Scheduled Castes and are engaged in government jobs, daily wage work and fishing.

As part of the Odisha Disaster Recovery Project (ODRP), more than 500 houses are being built in Markandi—one of the large settlements reconstructed under the project. While the three communities had been living together before the intervention, the new houses have been constructed in three separate locations convenient to each of them. The residents were involved in the decision making process of the project and were able to influence the project design in terms of the location of the new houses and making modifications in the approved housing plan. While the new houses have been built with high plinths and RCC roofs to protect them from storm surge and high wind speeds, the new houses are still exposed to risk.

Socio-cultural outcomes: Of the various indicators studied with respect to their original (pre-intervention) conditions, many risks seem to have been avoided and new benefits created, particularly by maintaining the social ways of living and ensuring the continuity of networks and informal support systems. By including people in the planning and decision making processes, the nuances of caste related requirements have also been taken care of. There seem to be better psychological outcomes for people, as they have also clearly stated how they would feel safer during

future cyclones in the new houses. Providing the new houses in the name of women may contribute to their empowerment, although its impact must be studied over a longer period, even after project completion. They have also negotiated and built houses in close proximity with their relatives'. There are, however, a few social risks that seem to have continued and therefore can be seen as opportunity costs for the people as well as the project outcomes. The level of female education is low and the rate of dropouts high, and there continues to be a lack of secondary or higher education facilities close by. There is also a persistent lack of proper health facilities in the vicinity and inadequate access to those that exist in nearby towns. While the physically disabled are given priority at the time of beneficiary identification, the house designs do not sufficiently accommodate their needs, thereby creating risks. No new social risk seems to have been created, particularly by maintaining proximity to the original site and enabling community participation at the time of decision-making and planning level itself.

Economic outcomes: Most economic risks have been avoided and certain benefits have been created, owing to the programme intervention design. Ensuring people's proximity to their place of work (sea for the fishing community, land for farmers and lakes for those involved in pisciculture) has helped avoid the creation of risks for the communities. The mason training programme, albeit small in size for a large village such as this, did seem to have a positive uptake among the villagers. While many people already had active bank accounts (and some zero-balance accounts), all beneficiaries now have bank accounts as part of the project requirements. The project also provides them with multi-hazard insurance for any future calamities. Several community members (mostly men) mentioned during focus group discussions

that they would have preferred improvements in the canal and getting bigger boats to receiving houses, as they perceived their everyday economic risks to be higher than cyclone related risks. This could have been an opportunity to improve people's economic independence, and the risk therefore continues. There is no improvement in marketable assets, including the new land or house, which is a non-alienable asset. No economic or asset based insurance or system for liquidity has been enhanced as part of the intervention.

Physical outcomes: Almost all physical risks have been avoided and new benefits created for the people, owing to the design, planning and implementation processes. People have been able to make significant design changes by sharing walls across the village and making space between houses for their boats and nets. Despite the proximity to the coast, higher plinths are likely to protect them from surge. Longer term impacts of climate change and sea level rise are harder to predict but could be a potential threat in the future. The provision of toilets was seen as a welcome addition, and is likely to reduce open defecation, particularly among women. In terms of asset accumulation, people have been allowed to retain the ownership of their old houses,

along with the new sites provided. The new cyclone shelter being built for the village is also likely to be useful in the event of a cyclone in the future, although there seems to be no change in the early warning systems employed. The original proximity to public spaces also continues. Markundi has a water purification unit provided by World Vision, which they can continue to access despite relocating. One prominent continuing risk pertains to solid waste management. Unless an alternative arrangement is made, people are likely to continue disposing their waste in the sea. Another issue is the severe power cuts. With no lights provided in public spaces, this could pose a threat to safety in the longer term.

Environmental outcomes: While access to natural resources (sea, forest land, water bodies for pisciculture activities, etc.) continues as before, contamination of the sea by people as well as due to construction activity is likely a risk created. Some of the forested land has also been cleared to accommodate the construction of houses for the Bohra community (agriculturists) and this could be seen as a risk created, unless the trees are replicated soon. The state of the groundwater remains

Box 1: Disability

A single, differently abled mother of a 4-year-old son expresses her anguish on how she struggles through daily life, dependent on others for simple needs. "Like other people, I want to at least do everyday grocery shopping by myself without getting help from others. I feel uncomfortable asking my neighbours for help on a day-to-day basis but because of my condition I don't have a choice but to depend on someone. I can't help myself." She pays Rs 2-3 to her neighbours to fetch water and buy vegetables for her household. She hopes that once her son grows up he will help her. She wishes that buildings, markets and especially cyclone shelters were disabled friendly. The four days she had to spend in a cyclone shelter post Phailin were a bad experience for her, with no cooked food or water and no first aid. She was stranded alone in the shelter for two days after the cyclone, along with her then two-year-old son. There was no one to take her back home and she finally had to contact her mother for help.

Rural areas in India are traditionally developed organically and lack well-built roads. Looking for a footpath or a dedicated wheelchair lane in such a context is a distant dream and this is also the case in the village where this resident of Markandi now lives. Markandi lacks an asphalt road and the existing gravel pressed roads as well as the concrete cement road are uneven, given the natural topography. While she was allotted a house under ODRP, none of the standard houses under the project are designed to meet the needs of those with physical impairment. There are no ramps, and even the toilets are not accessible. In her case, since her house has been moved inwards, towards the village, she now has to travel a few extra miles to reach the main road. The question that arises is this: While the programme has motivated people to make amendments to these standard designs, what if people do not have the technical knowledge or the capacity (financial or otherwise) to do so?

The government has provided her a wheelchair as part of Phailin relief, in addition to a monthly disability pension of Rs 300. However, she cannot use the wheelchair as she requires someone's assistance to operate it. She feels that a motorised wheelchair would have been more useful as she would not have to depend on anyone. Therefore, while the provision of wheelchairs to differently abled people may seem useful, her perspective shows that such entitlements can be impractical and/or insufficient. The wheelchair provided by the government has a wheel that is almost flat and there is no cushion, which one may require on uneven roads. Living next to the sea coast doesn't help either, with the loose and sandy soil. Given such a setup, she, and so many like her, have to continue to struggle daily to even move about.

Box 2: Loss of Entitlements

After a fire engulfed their houses in 1997, soon followed by the Super Cyclone in 1999, many people decided to re-build their roofs, partially with RCC, even though it meant taking a substantial loan at the time. However, despite the fact that many of them continue to be in debt even after 15 years, they are not entitled to receive any houses under the current project. Moreover, there is a fear among people of being excluded from the BPL list because of their pucca roof status. Many such non-beneficiaries have been left feeling worse off after being completely excluded from the project.

saline, and no action has been planned for treating it before consumption.

Quality of life: Lack of access to most basic services still continues at the site and remains a risk. Access to public transport, which further affects access to social infrastructure such as schools, hospitals and markets, is very limited. Avoided risks include continued access to public spaces and the existing PDS system, given the proximity to the original village.

Note: Not much data could be found in terms of governance and regulatory outcomes at the settlement level. However, in the rural context of Ganjam, a Village Development Committee (VDC) has been created and is being funded, which is likely to help with operations and maintenance of the settlements in the future. Further discussions around these outcomes can be found in the section on city and regional level risk assessment.

Devi Nagar

Devi Nagar is a relocation site with nearly 40 families from two adjacent villages, namely Ramayapalli and Lakshmipur. They are two of the many villages that were damaged by the cyclone Phailin in 2013. The relocation site is 5 kilometres away from the old villages. Many of the families have been engaged in traditional forms of horticulture, some work as daily wage workers in farms or as horticulturists at the TATA project site. Devi Nagar is one of the first projects implemented under ODRP and all the houses there were built by a contractor. With limited time for implementation, families were not involved in the decision making (site selection) or implementation process and were relocated after the house construction was complete. Most of the families commute daily to their old village as they continue to practice the same livelihoods after relocation.

Socio-cultural outcomes: Across the various indicators studied with respect to their original (pre-intervention) conditions, many risks seem to have been created along with some new benefits. People seem to have better access to medical facilities after being moved closer to Chhatrapur. Providing the new houses in the name of women may contribute to their empowerment women, although its impact must be

studied over a longer period even after completion of the project. Some families, with differently (physically or mentally) abled members were given priority during housing allocation. One such family moved voluntarily as this new location brought them closer to their workplace. The level of female education is still low and the dropout rate is high. People continued to stay in damaged houses until new ones were provided to them; they did not avail the rental support provision. Although caste related issues are not very visible in these villages, in one particular case, it posed a challenge as a lower caste family was relocated amongst higher caste households. Even at the time of an emergency, not much support was forthcoming from the neighbours, despite repeated attempts by the community mobilisers to get them to help. It thereby became evident how deeply ingrained caste lines are. Not many people use the newly built toilets due to their poor design and quality of construction. Several families have split up and now stay in separate locations, and this has increased vulnerability, particularly in the case of women, the aged and children. No new anganwadis have been created, nor is there access to the older ones. People are highly dependent on social infrastructure like community centres, temples, which have not been provided at the new site. Added to this is the loss of local water bodies and wells, as well as funeral grounds, all of which functioned as important cultural utilities.

Economic outcomes: The project has had some benefits, and while certain risks have been created, others continue from the previous site. Many people had active bank accounts (and some zero-balance accounts) to begin with, but all beneficiaries now have bank accounts as part of the project requirements. The project may also provide them with multi-hazard insurance for any future calamities. The distance from their lands has increased and thus creating new risks for the community. The situation with respect to marketable assets has not improved, given that the piece of land or house provided to them is a non-alienable asset. No economic or asset based insurance or system for liquidity has been enhanced as part of the intervention. Due to the considerable distance between the old and new sites, most people have lost access to their informal financial networks.

Physical outcomes: Many physical benefits have resulted from the project, while some new risks have also been created. The provision of toilets is likely to reduce open defecation, particularly among women. In terms of asset accumulation, people have been allowed to retain the ownership of their old houses along with the new accommodations provided. People have also been given space and provisions to modify or extend their new houses. There is adequate access to individual water supply. One prominent continuing risk is the absence of solid waste management. There are no early warning systems in place. While there is a provision for people to receive messages on their mobile phones, there have been instances of miscommunication. Moreover, there are severe power cuts with no lighting in public spaces, which could pose a threat to safety in the long term. Crops are frequently and increasingly being destroyed by monkeys, and this menace is perceived as a bigger threat than cyclones. As a result, people have to stay on site for longer, and with the increase in distance, this means they have to leave their homes before dusk. In the process, their produce suffers. Instances of theft have also been reported at the new site, with safety becoming an issue, especially for women.

Environmental outcomes: There are no trees or plants in the new site. Many people have created some space to grow their own food. There have been reports of water poisoning in this region ever since the coming up of the Indian Rare Earth Institute, which is affecting people's kidneys. However, this risk persists in both old and new sites, despite which no alternate strategy for water treatment has been thought of in the new site. While there is provision for ground water pumps, and the water in the new site does not seem to be saline, there are questions around the long term sustainability of this source of water.

Quality of life: While the existing site had established connections with local schools and hospitals, at the new site, these are now much further away. Many families with school-going children have thus chosen to stay in older sites for the sake of their children's education. It is not clear if the provision of TATA health services will continue to be provided to people who have been relocated. Although housing allocations and other entitlements have prioritised widows and the differently abled, the aged continue to remain excluded from these benefits.

Box 3: Mixing Low Castes with High Castes

Before relocation, Shanti [name changed] lived in Lakshmipur with her husband and two kids. All the families in the vicinity belonged to the same caste—a caste whose members were considered untouchable by other inhabitants of the village.

Shanti's family was the only one that was allotted a new house in Devi Nagar, with other beneficiaries from Ramayapalli and Lakshmipur villages, while the rest of her community stayed back in the old village. This resulted in a loss of community support for the family.

Shanti's husband, being an alcoholic, mostly stayed away from home, and she had to take care of her children alone, without any help from the community. On an unfortunate day, she lost her two-day old baby, who she had delivered herself, but no one in the community stepped forward to help or supported her, because she was considered untouchable.

Shanti may be safer with respect to future cyclones, with her new 'disaster-resistant' house, but the day-to-day risks and struggles she faces because of her caste raise the question of whether she would have been better off living with her own community in the old village, or in a smaller house that didn't necessarily adhere to all the government guidelines.

While the government's intention is to provide safe housing for all the affected families and improve their lives in the long term, ignoring the social and cultural practices of communities may create new risks that could negate the positive outcomes of the intervention. Another point to note here is that when people were asked "if they will miss their neighbours in the new location", the response was largely a no. But the stated preference seems to be different from the actual lived experience in many such cases as described above.

Uppalaputti-Basanaputti

Uppalaputti-Basanaputti (UPB) is the relocation site for families from five villages: Terabasa, Uppalaputti, Haripur, Bandar and Raekatturu. Of these, three villages—Haripur, Bandar and Raekatturu—were studied in detail since most families came from there. These villages are located along an estuary north of Gopalpur town. While being geographically, the villages are divided along caste lines. People in Raekatturu predominantly belong to a fishing community and practise sea water fishing. Families in Bandar practise both sea and freshwater fishing. Families in Haripur belong to Scheduled Castes and work in government jobs, while some are daily wage workers and others practise freshwater fishing. These villages were severely affected by heavy cyclonic winds and storm surge during cyclone Phailin in 2013. As part of ODRP, they are being relocated to UPB, near the IREL factory, which is 5 kilometres away from their village. Inhabitants of only part of the village, where houses have been damaged due to the cyclone, are being relocated, while the rest will continue living there. The relocation site is inland and is not connected to the sea. At the time of the study, families were still living in these villages as the construction of the new houses was in progress.

Socio-cultural outcomes: More risks seem to have been created than reduced or avoided, with the splitting of the community. Most of the respondents have not visited the new site or participated in the construction process. As most of them are involved in fishing they don't have time or skills to work in the new site. Because of this, they don't feel connected with the new site and are not motivated to relocate. The new location being 5 kilometres away from their old village, women have mentioned that they don't feel safe living and commuting to the new site as there have already been incidents of theft, etc., on the access road and at the new site, especially after dark. They also feel it is unsafe to send their children alone to school from the old site, which is still located in the old village. They specifically mention that this will be difficult for women and may lead to dropouts in the future. Earlier, they could depend on their neighbours or relatives to take care of their children while they were at work, and this support does not exist in the relocation site, with families from other villages. There are also concerns around the issue of caste and many anticipate conflict with the mixing of people from many villages. With most of their relatives living in the old site, some people are anxious about their rituals and cultural practices being affected once they relocate. In the case of bigger families, it is likely for younger members to relocate, leaving their older family members at the old site. The only positive outcomes mentioned are that families feel safer in their new houses with respect to cyclones and storm surge, and in the case of

women, the issue of open defecation has been resolved since the new houses have toilets and bathrooms. Providing houses in the name of women as part of the project design may have a positive impact in the future.

Economic outcomes: The lack of consideration in the project design of the interruption of livelihoods at this particular site has resulted in the creation of many risks. With most of the families being dependent on fishing, and the new site being located inland, with no access to the sea, people have to travel to the old site for fishing and to access their networks. Fishermen, who go to the sea at midnight or early morning, find it difficult to get transport. Women who work as daily wage workers also face trouble travelling to work because they now have to rely on private transport to access the highway. This extra travel cost is a burden on them. While at present, both men and women work, given the extra investment on travel and concerns around safety, women may have to stop working, thereby increasing the financial burden on the family and rendering women dependent. No mason training programmes have been conducted in these three villages, which makes them still depended on their old livelihoods. The newly allotted house is also a non-marketable asset. The only positive economic outcome of the intervention is that all the beneficiaries now have access to banking services.

Physical outcomes: Some physical risks have been avoided with the intervention. The new houses have roofs built with RCC and burnt brick mortar, which keeps them safe from high cyclonic wind speeds, while the off-coast location protects them from surge. The new houses are an additional asset for the families as they still have access to their old land. They are better ventilated, with setbacks on all sites, and are designed for extension on the first floor. With most of the families previously practising open defecation, the construction of toilets in the new site is a positive outcome. All the houses in the new site have piped water connections, which is a risk avoided. When asked about the quality, respondents perceive that the drinking water is contaminated due to the presence of the nearby IRE factory. However, the quality of water needs to be tested for accurate assessment. In terms of cyclone safety, there are shelters in the old site but none in the new site, which may be an issue. No public spaces have been created for community gatherings and there are no play areas for children. This is a risk created since the new site is located on either side of the highway, with heavy truck traffic. The absence of any provisions for solid waste management in the new site is an opportunity lost.

Environmental outcomes: Access to natural capital, such as the river, sea, etc., has been reduced after

relocation. Families relocated from Haripur now have limited access to their kevda farms. From responses it was identified that the quality of water is poor, with possible contamination by the nearby IREL factory, and this may lead to some health impacts after relocation, which is a created risk. However, the salt water intrusion in the old site rendered the groundwater saline, and this may be an avoided risk in the new site.

Quality of life: Access to all services like public transportation, education, hospitals, public spaces will be reduced after relocation and this will have a negative impact on the quality of life. Lack of public transport will lead to limited access to the workplace, schools and increase dependency on private transport, which is expensive. Some of the beneficiaries also expressed concerns that their BPL cards may be cancelled as they now have a pucca roof, and the increase in expenditure on food could be an additional burden.

Governance and institutional outcomes: As part of the ODRP design, a VDC is supposed to be created and funds will be provided for the operation and maintenance of all the services in the village. However, given the existing caste divisions within the villages, the functioning of VDCs will have to be studied in the future.

Visakhapatnam (Urban)

Paradesipalem

Paradesipalem is a relocation site in a suburb of Visakhapatnam and is one of the housing projects built under JNNURM. Its inhabitants work as auto-rickshaw drivers, watch repair workers, daily wage workers, etc. There are a total of 928 housing units in the site of which only 500 units were occupied at the time of the study. Before relocation, the families were living on rent in various parts of the city. All of them had applied for housing in the 1990s and voluntarily relocated to this site. The new site is more than 20 kilometres from their old location and, given the lack of proper facilities and services, families have to travel long distances for work, education and other services. With nearly half the units unoccupied, most of the services promised under the project are yet to be completed. Despite having been built recently, the quality of the units and the site itself has deteriorated with lack of proper operations and maintenance. Other than the overhead water tanks, none of the structures suffered damage during Cyclone Hud-Hud.

Socio-cultural outcomes: Most people moved to Paradesipalem voluntarily and as a community that

Box 4: Moving Fishermen Away from the Sea

There is no fixed timing or pattern for fishermen to go into the sea. They decide on several factors such as weather conditions, roughness of the sea, the previous day's catch, etc. They usually go as a group, especially for deep water fishing. These groups are not fixed and are made depending on whoever is available and willing to go. Thus fishermen prefer to live closer to the sea as they can gather and leave as and when there are enough people.

The volume of the catch in the course of each trip is split equally between the members of the group and the person who owns the boat and fishing net receives two additional parts for their assets. The fuel costs are split equally between the members. There is no guarantee of a catch every day and sometimes, especially after a cyclone, there is no catch for months. On such days, there is no income and the amount spent on fuel is a loss.

After being relocated 5 kilometres inland, these fishermen will no longer have direct access to the sea. There are no public transport options available early enough in the morning for them to reach their old village, besides auto-rickshaws, which are expensive and therefore unaffordable for one person, in case no one else is willing to go. Gathering willing fishermen will have to become a daily process to ensure that expenses are shared, to be repeated while returning from the sea. Given the uncertainty about the volume of catch, the money spent on the commute is an additional burden for the families.

The inhabitants have no skills other than fishing. Boys are trained for fishing very young, around the age of 14 to 16, and after 16, they are sent to the deeper portions of the sea. They don't have the option to go to school since they won't be able to go fishing. Some respondents have complained about the paucity of jobs for the educated.

People also feel that the government has been unfair to their village, as compared to the villages of Markandi, Sonapur and Golabandha, where the land acquired by the government to provide alternative housing is adjacent to their old villages.

has lived and worked together before. This community cohesion seems to have contributed to several positive outcomes, including a social safety net. Over time, women of the area have formed small groups to provide microcredit facilities to the residents, which serve as informal channels to access credit. These collective groups create awareness about entitlements and help people to access credit channels, thus enabling them to solve their own issues. Most of them use the toilet facilities provided at the household level—indicative of risks avoided by the residents. However, there are some risks which are certainly an opportunity cost for individuals. Post relocation, women couldn't find opportunities to work in the new site. Most women, who do not have any work experience and lack skills, have decided to start home based income generating activities in the new site. Some, who have been engaged in diverse jobs and do possess specific skill sets, have difficulties finding appropriate jobs at the new site. Other continuing risks pertain to health, lack of access to credit and an increasing number of female dropouts from work. The increase in distance and travel expenses has negatively affected the school and higher education dropout rate of both boys and girls in the settlement. In addition to these risks, the lack of government schools within the locality has led to residents leaving the site. Creation of new risks have aggravated the risks they were living with. The lack of access to collective assets has been a continuing risk. Residents have to travel longer distances to access healthcare facilities, which increases their travel expenditure. The nearest private hospital is located at a distance of 5 kilometres. Even during medical emergencies, they either rely on neighbours or have to walk.

Economic outcomes: Most people who chose to move to the new site were self-selected based on easy access to their livelihoods. While the auto-rickshaw drivers watch repair workers continue to work in the same areas, everyday risks associated with earning and self-management of resources have not been alleviated after relocation, and many have stopped working regularly. In addition to their material cost, their travel expenses and time taken have increased, which affects their daily profit margins. Women, in particular, have had to compromise on labour productivity in order to avoid risks of high expenditure, besides losing their job networks. The continuing risks are more substantial than the risks reduced and newly created risks. Easy access to informal credit sources has become an opportunity cost for both creditors and defaulters. There is no change in the access to marketable assets, which is a continuing risk. Few people own marketable assets that are productive, like auto-rickshaws, cooking equipment, watch repairing tools, etc. Post relocation, most of drivers don't use them quite often and only work on

alternate days. Not having life insurance or other forms of insurance is another continuing risk as they are not in a position to recover from any damage to their life and/or property due to climatic or other external hazards. The houses allocated to them are not freely marketable, but a sense of ownership has allowed a trade-off between asset ownership and productive use of labour power. Their major concern is that they cannot afford a house in the city at the available market prices. Many of them can access bank accounts as part of the project and to avail other government schemes. But the increased distance and lack of access to facilities affects their monthly expenditure and consumption patterns. Residents had expected to save the money they used to spend on rent. After relocation, however, the change in their monthly expenditure pattern has adversely impacted their savings.

Physical outcomes: Many more physical risks have been avoided than created. Some existing risks continue to prevail, for instance, families with a large household size face space constraints. In many cases, this has led to joint family structures breaking up into nuclear units. Couples who married subsequent to the beneficiary selection process have still not managed to procure accommodation. As for drinking water, most residents rely on either bottled water or public taps. They have stopped using water supplied through overhead tanks due to the change in water colour as a result of poor maintenance. Many have reported instances of skin infection and other health issues. One of the continuing risks pertains to solid waste management. There are no proper spaces for waste disposal. At present, the vacant space between two housing blocks is being used to dispose of waste, creating unhealthy living conditions. There are also no street lights along the approach road, because of which women and children, in particular, find the roads unsafe during the night.

Environmental outcomes: Risks reduced, risks created and continuing risks are all somewhat comparable. Dependency on groundwater sources is a continuing risk. Many people living on the ground floor have cleared the space in front of their homes to grow plants, vegetables and fruits. People voluntarily take care of the plantations provided by the NGOs, all along the streets in the settlement. As a result, people with a history of respiratory problems reported being able to breathe better. However, uncontrolled vegetation in open areas is associated with greater risk of snakes.

Quality of life: The number of new and continuing risks surpasses those that have been reduced. Access to basic services has helped avoid the erosion of existing assets and contributed to good living conditions. New risks have been created as a result of inadequate

public transportation and lack of access to government educational institutions. Residents have been informed that bus facilities will be made available only after all the flats are occupied. Thus they have to incur travel expenses even to access public spaces like religious places, play areas, community halls, etc. As a result, people are having to compromise on their lifestyle in order to avoid spending. The absence of a government school within the vicinity or at an accessible distance has created new problems such as an increase in female dropout rate. Access to the public distribution system (PDS) and health facilities continues to remain a

challenge. One of the risks avoided to a certain extent is that everyone has access to bank accounts.

Note: Not much information was found in terms of governance, regulatory changes & their outcomes at the settlement level. Discussions with focus groups show that an NGO called Ujwala Bharati Mahila Samaikya has been providing support to residents in communicating with local authorities about their community level issues. The NGO tries to enhance people's participation, which has led to the formation of women & residents committees whose members are encouraged to solve their own issues at the community level.

Box 5: Outcomes Experienced by the Most Vulnerable in the Community

Women: While women used to contribute to the household income by working as maids in the neighbourhoods or unskilled construction etc., most of them have been compelled to stop working after being relocated because of the increase in distance from their potential employers. Family income dependency seems to have increased, and most women fear that they may be helpless in the event of an emergency.

The self-employed, particularly the aged: While many residents of the settlement are self-employed as auto-rickshaw drivers, watch repair workers, etc., they claim to be losing their markets owing to the large distances they have to travel and the time lost in reaching their customers. They worry about being replaced by other service providers, unless they leave their houses much earlier. This can be seen as an opportunity cost. It is also becoming a disincentive for the self-employed to work regularly. Post relocation, many families have now become nuclear, and older members are often compelled to support themselves. Those with work related assets are forced to spend money to protect their assets, such as auto-rickshaws. The lack of access to proper storage space for their work related equipment affects their monthly maintenance costs. The following experience has been shared by a 60-year old self-employed resident in Paradesipalem (translated from Telugu): *“My expenditure has increased since I moved here. I earn around Rs 200–250 per day, of which I spend Rs 100–150 on food per day. With the rest of the money, I purchase dry fish from Srikakulam [a district of Andhra Pradesh] in order to resell it. I’m 60 years old now. My sons cannot afford to look after me. I need to manage my financial needs. I have had to take up a space on rent to store the dry fish and other materials. Earlier, I used to live on the ground floor and had my own storage arrangements. But now that I live on the second floor, there is a space constraint. After relocation, I have not even been able to save Rs 100. All the networks and markets that I used to access earlier have been taken over by someone else. I used to sell dry fish every day, but now I manage to sell only on alternate days because I have had to build new networks at the new site. Moreover, I need to travel daily to the city, which costs me Rs 50–60 per day. All the money that I earn is just enough for me to survive. The only benefit is that I do not face any threats from a landlord to pay rent.”*

Entitlements: As part of the project, beneficiaries need to have access to bank accounts in order to start the payment process for receiving the allocated house certificate. The absence of appropriate documents to prove their identity and affordability conditions is becoming a hindrance in receiving house ownership. In Mrs Baskar Rao's [name changed] words: *“I applied for the house allocation when I did not have a ration card. At that time, the officers said that I could produce it for verification later. Recently, the Aadhar card has become mandatory to get a ration card or any other service from the government. As I don't have an Aadhar card, I am unable to get a ration card. Because of this, I cannot open a bank account to start the house certificate payment process (Rs 35,000 for a house occupancy certificate). I don't understand why they can't continue with the older procedure. Because of these new norms, I'm facing all these troubles, which no one cares about.”* Mrs Rao is not the only one; many people in the locality face similar difficulties as they don't possess the prescribed documents as mentioned in the project details. On the part of the administration, insisting on an identity card helps focus on target groups and to avoid over-consumption or leakages. However, these procedures themselves become a cause of risk as people struggle to access entitlements that they are eligible for. The criterion for allocating a house overlooked the existing social and economic dynamics.

Sevanagar

Sevanagar is a housing project that comes under JNNURM in Madhurawada region of Visakhapatnam. A total of 960 housing units have been constructed, of which most are meant for families from Sevanagar (the new site has been named after the old site), located near the railway station, and a few from other parts of the city. The old site was owned by the railways authority and the families were evicted without prior notice and relocated to the new site, 25 km away, in 2011. Local Municipal Corporation evicted the families on account of risk reduction to floods. Post eviction, the railways built a sports stadium and a club in the cleared land.

During the cyclone, the housing units at the new relocated site had suffered no physical damage but their work and flow of ration and supplies had been affected. Despite that, the families did not receive any relief as the government (and other aid institutions) assumed them to be unaffected.

Socio-cultural outcomes: Of the various indicators being studied to compare conditions before and after the intervention, very few risks have been reduced while several new ones have been created. Since all the residents belong to the same religious community, there is sufficient social cohesion. The provision of individual toilets at the household level has helped address the issue of open defecation to some extent and is safer for women as the new site is located in the outskirts of the city. Most people, especially women and children, use these toilets. On the other hand, however, the involuntary nature of the relocation has led to negative psychological outcomes. It was evident from our interviews that many people have still not come out of post-relocation shock. While the school dropout rates, for both boys and girls, were already high, they seem to have increased since the relocation. The lack of health care centres in the vicinity has led to an increase in medical expenses. Poor quality of drinking water has increased the incidence of waterborne diseases, as a result of which many deaths have been reported in the span of three years. Transformations in family support structures have also been observed; most of the families are now nuclear, with more female-headed households. Many people attribute a recent increase in the rate of suicides to economic stress. They also refer to an increase in accidents involving people falling off buildings in a drunken state, although time did not permit us to meet their families to know the actual causes and subsequent impact.

Economic outcomes: Post relocation, most of the economic risks faced by people continue to exist. Very few have been reduced while a few new risks have been

created. Many residents claimed that unemployment has increased after relocation in the case of both men and women. This has increased the financial burden, further leading to widespread alcoholism. The considerable distance between the old and new sites has affected household income from alternative sources as well as people's access to their social safety nets. Though people have not been provided with any additional skill training, a few years after being relocated, women themselves took up various home based skill training activities. Most beneficiaries have opened bank accounts, and have access to formal saving channels under the project. However, many of them mentioned that they are unable to save much due to an increase in their monthly expenditure. The lack of access and ownership of marketable assets still remains a risk as many people lost their household assets during the eviction. A few people have started their own small scale businesses within the site, which has allowed them to own some marketable assets. Most people still don't have access to either life or non-life insurance.

Physical outcomes: Most physical risks have been avoided. A few existing risks continue and a few have been created. Most people have moved from temporary to permanent house structures although they still do not have ownership documents and fear being re-evicted. People have access to electricity and better internal roads. There are no cyclone shelters in the vicinity and no early warning systems in the new site. Solid waste management is still a concern as most people dispose their waste in the open, leading to unhealthy living conditions. Transformation of housing typology from row housing to G+3 tenements might pose some risk in the future, particularly to those who are not able to climb up, or need to have access from the ground for work. Many people mentioned that their old houses were more spacious, and that they used to cook outside them with firewood. Despite the lack of ventilation and limited space, people continue to cook with firewood, as not many have gas connections. People do not have access to public transportation and other social infrastructure facilities in the new site.

Environmental outcomes: Many new environmental risks have been created along with a few continuing ones. Many people complained about poor water quality. Improper waste disposal has led to groundwater contamination, which has resulted in various health and respiratory problems among people. No effort has been made to create and maintain a green cover.

Quality of life: There are no risks avoided, but many new risks have been created. Lack of access to most basic services particularly public transport has affected further access to social infrastructure such as schools,

hospitals and markets. Given the adverse impact on the overall quality of life, there is a high level of dissatisfaction with the relocation.

to live together before the intervention were not allotted houses together. One major problem is that the allotted houses have been reported to be smaller in size, which

Box 6: Unclear Criteria for Beneficiary Selection

Several attempts were made by the East Coast Railways to evict the residents of Sevanagar but its residents filed cases against the railways and the evictions were put on hold for many years. Finally, in 2011, the railways and the Greater Visakhapatnam Municipal Authority (GVMC) forcefully evicted the inhabitants to the villages of Kom-madi and Madurawada. In one case, a female resident of Sevanagar, whose in-laws had abandoned her after her husband's death, did not get a house in the new site even though her own house had been demolished at the time of eviction. Though the government promised to provide her with housing, nothing has materialised yet. She lives in a rented house in the new site, along with her son. She does not have enough money to rebuild her own house. The monthly rental expenses have increased her financial burden. The absence of public participation and lack of clear criteria for beneficiary selection has adversely impacted both the social and economic situations in such cases.

Sonia Gandhi Nagar

Sonia Gandhi Nagar is an in situ upgradation site located along National Highway 5, near the Visakhapatnam Railway Station. With nearly 150 housing units, the project was completed in 2008 under the Valmiki Ambedkar Awas Yojana (VAMBAY). Families who migrated from several parts of the state had been living on the site for more than 50 years. The project started in 2002 and took 6 years to complete. Families that had settled on government land were given a site across the highway for transit shelters. In return for a basic contribution, all the beneficiaries were allotted non-alienable pattas* of the new housing units. However, three blocks were not officially allotted and some of the families who haven't received allotments have been staying illegally in these units. Residents were affected regularly by the floods from the overflowing drain passing through the site before resettlement. Residents living in G+2 RCC structures here suffered little or no damage in the cyclone Hud-Hud in 2014. Most families living here belong to Other Backward castes and work as daily wage workers, auto drivers, construction labour, laundry etc.

Socio-cultural outcomes: Many risks have been averted by resettling people on the same site without disturbing their existing social networks, cultural practices and informal support systems. With the provision of pucca houses, residents feel safer with respect to cyclone and flood related hazards. During the recent cyclone Hud-Hud, they provided shelter to families within the neighbourhood whose houses had been damaged. With toilets provided within the unit, women feel safer and secure. Some had complaints about the fact that neighbours and relatives who used

has forced many young people in the family to move out after they get married. As a result, older family members now feel the need to earn since they can no longer depend on their children. It was also considered that age of the head of the family was considered for allocation of houses and the ground floor houses were allotted to those who are above 60 years. Many new risks have been averted by the in situ upgradation and resettlement.

Economic outcomes: With in situ upgradation and resettlement, economic activity and livelihoods remained unaffected, thereby averting the creation of new risks. However, conducting training programmes and employing beneficiaries in the construction of houses would have improved their skills, leading to livelihood diversification, and the failure to do so is an opportunity lost. Given their proximity to their work location, both men and women manage to earn. Some families with premises on the ground floor have started small shops in their houses or in front of them, giving them an additional or alternate source of income. With little or no investment in the repair of old houses, over the last few years households have invested in marketable and non-marketable assets such as auto-rickshaws, sewing machines, refrigerators, mobile phones, televisions, etc. Meanwhile, the house itself is a non-alienable asset. All households have access to bank accounts. None of the families have any kind of insurance—life, non-life or asset based—which could have been promoted or provided through the intervention, and this constitutes a continuing risk.

Physical outcomes: In terms of physical outcomes, most risks have been averted with the intervention. Families living in temporary shelters have been relocated to G+2 RCC structures, which has reduced their exposure to frequent floods and cyclonic windspeeds.

* A patta is an official record of ownership of the land or the dwelling unit.

Toilets have been provided within each unit, reducing open defecation significantly. People who had been living illegally on government land have been allotted titles with minimum beneficiary contribution. While most of the houses have piped water connections, water supply to each household is yet to be provided by the government, even after 8 years of occupation. Though families have made their own arrangements, water availability and supply is still a continuing risk. With reduced build-up density on the ground and wider streets, access to public spaces and meeting spaces has improved. A community centre has also been provided as part of the project. The central location of the site is an advantage. However, since it is located next to the highway, it constitutes a risk for children, who have no designated play areas. Even though there is a private school and playground adjacent to the site, it is not accessible for people living on the site. Families received announcements about the cyclone and have also received sufficient relief material after the cyclone, being in the centre of the city. The absence of solid waste management is a continuing risk.

Environmental outcomes: The site being located in an urban area, there is very limited access to natural resources, though this fact remains unchanged from prior to the intervention. However, the tree cover has reduced because of the cyclone and will take years to recover. The poor quality of air constitutes a major risk, and this is made worse because the site is located next to a very busy highway. The wastewater generated from the dhobi ghat at the site is let into the drain without any treatment, which may affect the quality of groundwater.

Quality of life: Access to quality education and health services still remains a risk. While there is a private

school located adjacent to the site, it is unaffordable for the families and the school across the highway is too dangerous for the kids to access. Access to public transport remains unaffected—a risk averted because of in situ resettlement.

Institutional and governance related outcomes: Not enough information is available on the new risks created or risks that existed prior to the intervention.

Comparing Outcomes across Sites

Methodology

This is an attempt at visualising the overall costs (risks created or continuing risks as opportunity costs) and benefits (risks reduced or avoided) experienced by the people in various select settlements. In this case, the existing conditions for various social, physical, economic, environmental and quality of life indicators have been documented to understand the conditions prior to the intervention. This is followed by the documentation of various changes, whether they are positive outcomes (risks reduced or avoided) or negative (risks created or continuing with no change). Since these costs and benefits cannot be directly equated—the impact of each benefit may not necessarily negate the negative impact of some other costs, and neither can the weightage of each of the impacts be similar—these must be represented on different scales (and are therefore not linear). Yet for the sake of simplicity, each impact has been documented as a ‘yes’ or ‘no’ response (1 or 0 for benefits and –1 or 0 for costs). Moreover, the number of indicators used for each outcome cluster—social, physical, economic, environmental and quality of life—varies (although kept

Box 7: Issues with Beneficiary Selection and Allotment

Even after nearly 8 years of construction, housing units in three blocks have not been allotted to any beneficiaries. Families have been living illegally in these units for the last few years. While most of them have been given allotments and titles, some have been left behind. One of the respondents interviewed during the primary survey says, “My family had been living here for a very long time. We submitted all our details and paid some contribution amount but only my brother got an allotment and I didn’t. Immediately after they released the beneficiary list, those who didn’t get an allotment formed a group and filed a case against the local municipal corporation. All of us made temporary shelters within the site and started living there. We approached the colony association, but there was no response. We found that our colony leaders have used their political connections to prevent us from getting houses as they want extra houses, given that this is a prime area. After this we formed a group and started approaching the local MLA and municipal corporation directly. Two years before the cyclone, we occupied these houses and started living here without any documents. A year later the municipal corporation approached us and asked us to vacate the houses and told us that we would get allotments. We moved out, but they have offered us houses in Madhurawada, which is 30 kilometres from here. We refused and requested allotments here in Sonia Gandhi Nagar, where we have been living for generations. We will lose everything if we go Madhurawada. After the announcement about the cyclone we moved back into these houses and have continued to live here. Even though officers came for an inspection later, they did not ask us to vacate. If they evict us again, we will have no place to go to as our shelters were completely damaged in the cyclone.”

constant across the settlements), and therefore the total impact can be compared only within a cluster and not across. Please see Appendix 5 for a sample table used for documentation, along with the reasons noted alongside.

In order to compare results across settlements and their overall outcomes, a three-by-three matrix can be used for each of the outcome clusters, with costs represented on the X axis and benefits represented on the Y axis. As explained previously, these numbers are merely indicative, and the use of high, medium and low ranges makes it more intuitive to understand, irrespective of the weightages of each indicator, as long as they remain the same across the sites. The top left corner cell indicates the highest number of benefits and lowest costs—the ideal condition—and the bottom right corner indicates the lowest benefits with the highest costs—a condition to be avoided by all means.

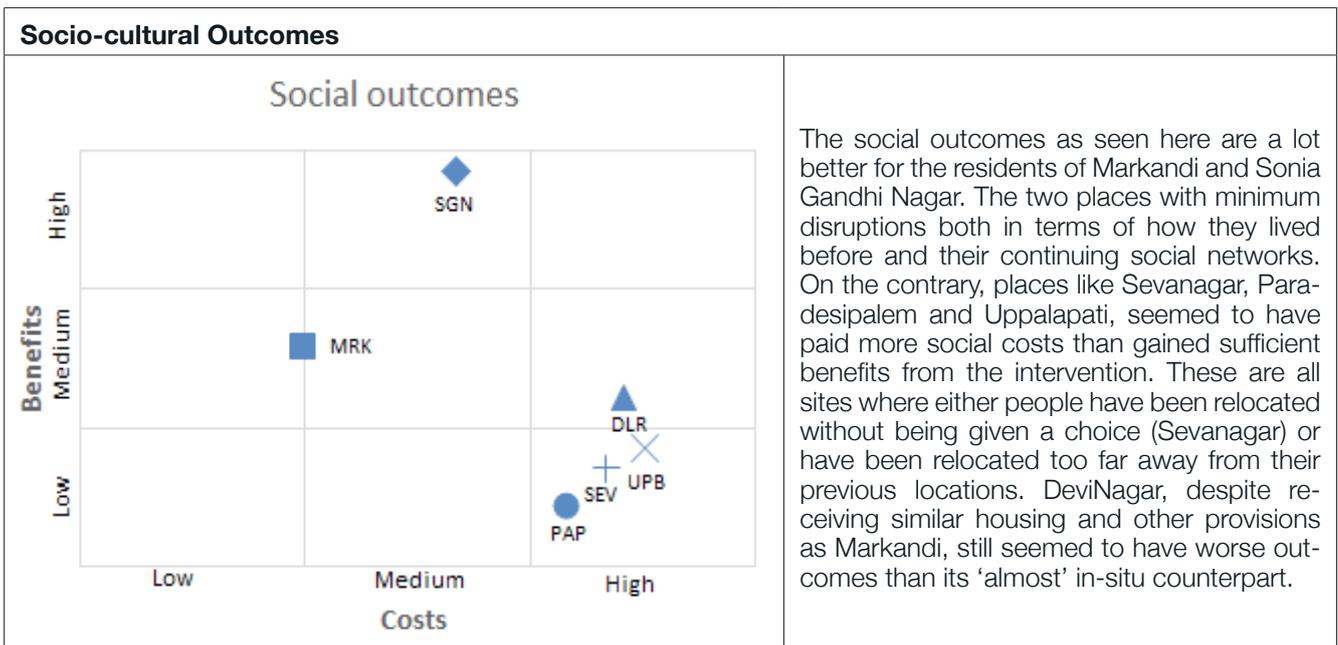
Outcomes in comparison

Using about 23 indicators for socio-cultural outcomes, 31 for physical, 19 for economic, 7 for environmental

and 6 indicators for quality of life, the overall costs and benefit outcomes for the settlements post the interventions are as follows:

Even a cursory look at these visualisations and analysis shows that those who have been provided in situ housing (SGN) or have been moved the least (MRK), face the least costs and fewer new risks. While some of their previous challenges persist, going forward, they could be resolved with other means and resources. Cases where the residents have been moved by force (SEV), in particular, are much worse than they were to begin with, and no amount of resources can bring back lost lives and reduce trauma. In some cases, such as DLR and UPB, results could have been more beneficial, and costs could have been avoided if people had retained and sustained their previous ways of living despite relocation, which could have been possible by relocating them closer. This leads us to the next section, where we will make an attempt at understanding the various decision making and implementation processes from the perspectives of these outcomes.

BENEFIT \ COST	Low	Medium	High
High	BEST OUTCOME		
Medium			
Low			WORST OUTCOME



Physical Outcomes	
<p style="text-align: center;">Physical outcomes</p> <p>The plot shows a 3x3 grid of Benefits (High, Medium, Low) vs Costs (Low, Medium, High). SGN (diamond) and MRK (square) are in the top-middle cell. SEV (plus), UPB (cross), DLR (triangle), and PAP (circle) are in the middle-right cell.</p>	<p>The physical outcomes of asset accumulation and risk reduction overall seem to be better than other risk reduction outcomes. This is primarily because the projects often focus on these outcomes and deliver housing designed towards that objective. Yet, there are many risks that either continue in terms of quality and reliability of drinking water sources, solid waste management, reliable public transport and early warning systems. In many cases such as DLR and UPB new risks are created in terms of access to open spaces and other natural capital. Sites such as Sevanagar and Paradesipalem also suffered access to social infrastructure such as schools and hospitals, which they were in proximity to, before.</p>
Economic Outcomes	
<p style="text-align: center;">Economic outcomes</p> <p>The plot shows a 3x3 grid of Benefits (High, Medium, Low) vs Costs (Low, Medium, High). MRK (square) and SGN (diamond) are in the top-middle cell. DLR (triangle) is in the middle-right cell. SEV (plus), UPB (cross), and PAP (circle) are in the bottom-right cell.</p>	<p>Residents of Markandi and Sonia Gandhi Nagar could continue working as they were before, with some additional benefits such as access to bank accounts. There are no new risks created for them, but informality, lack of access to insurance, and asset ownership (individual and community owned) remain the same and could be improved. Many claimed in MRK that they would have preferred receiving help in building a better and bigger canal, instead of receiving houses, which would have improved their overall income in the long run and they could have improved their housing conditions eventually. On the other hand, residents of DLR, UPB and SEV in particular have suffered dramatic changes in the livelihoods and increase in overall expenditure, primarily due to the distance between the new and old sites. Women in PAP have been affected after relocation, since they are no longer contributing to the income of the family. No new marketable assets are provided as a part of any of the projects including housing or land, which remain non-alienable titles.</p>

Environmental Outcomes																						
<p style="text-align: center;">Environmental outcomes</p> <p>The scatter plot for Environmental Outcomes shows the following approximate positions:</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Costs</th> <th>Benefits</th> </tr> </thead> <tbody> <tr> <td>SGN</td> <td>Low</td> <td>High</td> </tr> <tr> <td>MRK</td> <td>Medium</td> <td>Medium-High</td> </tr> <tr> <td>PAP</td> <td>Medium</td> <td>Low-Medium</td> </tr> <tr> <td>DLR</td> <td>High</td> <td>Medium</td> </tr> <tr> <td>UPB</td> <td>High</td> <td>Low-Medium</td> </tr> <tr> <td>SEV</td> <td>High</td> <td>Low</td> </tr> </tbody> </table>	Location	Costs	Benefits	SGN	Low	High	MRK	Medium	Medium-High	PAP	Medium	Low-Medium	DLR	High	Medium	UPB	High	Low-Medium	SEV	High	Low	<p>There's a much larger spread in terms of the environmental outcomes. For the residents of SGN it has not changed much, although some risks persist primarily because they are located next to a busy highway. MRK, too continues to take advantage of having access to the sea, and other natural resources, although a part of the forest had to be cleared to accommodate for the relocation of agricultural communities. PAP residents too claim to have better air quality in the new location away from the city, although water quality and solid waste management systems are worse. They also claim that snakes thrive in the wild vegetation nearby and would prefer it cleaned on regular basis. Despite complaining about groundwater contamination by the Indian Rare Earth Institute located nearby, no action has been taken to reduce this risk as it continues even in the new sites for both DLR and UPB. Their access to vegetation and green cover (and sea in the case of UPB) has also reduced substantially after relocation. Again, SEV seems to have the worst outcomes with respect to environmental conditions, many created due to poor waste management leading to various diseases.</p>
Location	Costs	Benefits																				
SGN	Low	High																				
MRK	Medium	Medium-High																				
PAP	Medium	Low-Medium																				
DLR	High	Medium																				
UPB	High	Low-Medium																				
SEV	High	Low																				
Quality of Life Outcomes																						
<p style="text-align: center;">Quality of life outcomes</p> <p>The scatter plot for Quality of Life Outcomes shows the following approximate positions:</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Costs</th> <th>Benefits</th> </tr> </thead> <tbody> <tr> <td>SGN</td> <td>Low</td> <td>High</td> </tr> <tr> <td>MRK</td> <td>Medium</td> <td>Medium</td> </tr> <tr> <td>DLR</td> <td>High</td> <td>Low</td> </tr> <tr> <td>PAP</td> <td>High</td> <td>Low-Medium</td> </tr> <tr> <td>UPB</td> <td>High</td> <td>Low-Medium</td> </tr> <tr> <td>SEV</td> <td>High</td> <td>Low</td> </tr> </tbody> </table>	Location	Costs	Benefits	SGN	Low	High	MRK	Medium	Medium	DLR	High	Low	PAP	High	Low-Medium	UPB	High	Low-Medium	SEV	High	Low	<p>The overall quality of life is measured using indicators for access to various services that are essential for a dignified life. While most people have received better housing, they fall short on other parameters. In the cases of SEV, PAP, and UPB the overall quality of life has suffered since they no longer have access to schools, markets, hospitals and other services that they did before. They also fear that they may now have to give up their Below Poverty Line (BPL) Cards as they have been given houses with concrete roof. Many families in DLR also said they felt unsafe, and worse off because families have been split up and made to live in separate houses far from each other. Residents of MRK face no new risks, but many of their previous challenges such as access to transportation networks, adequate health facilities, etc., still persist.</p>
Location	Costs	Benefits																				
SGN	Low	High																				
MRK	Medium	Medium																				
DLR	High	Low																				
PAP	High	Low-Medium																				
UPB	High	Low-Medium																				
SEV	High	Low																				

Recommendations

A	Project level Characteristics	
A1.	Type of Project	(a) In situ rebuilding/upgradation (b) Temporary resettlement (c) Relocation (d) Resettlement
	<p>Based on the outcome assessment by clusters, it is evident that best benefits and least costly outcomes are experienced when all aspects of the original life of the ones affected are replaced or recreated “one is to one”. Since this is easiest in the in-situ scenario, their outcomes experienced are better as compared to others. Although, proper temporary housing options or rental support must be included as a part of the in-situ design implementation. Relocation is recommended only as long as in-situ upgradation is not possible, and the distance between old and new sites is minimal (less than 2 km in rural and 5 km in urban) such that continuity of life and services that they are accustomed to can be maintained, even if provision of new services is not planned. Resettlements is not recommended, unless it is clearly understood that it is the only means of reducing risk as well as improving overall development outcomes of the people. It is observed in cases such as Paradesipalem, that despite providing most other social, physical, and economic services as well as getting people to agree, relocation still burdens people, potentially both short and long term.</p>	
A2.	Type of Risk Management	(a) Corrective/Post impact (b) Prospective/Pre-emptive (c) Not applicable
	<p>All rural cases studied here are post-impact corrective interventions (ODRP Rural) while all urban cases are prospective (Paradesipalem, Sevanagar, and Sonia Gandhi Nagar). The study shows that it is extremely difficult to get people’s buy-in in the prospective action scenario, because people’s perception of risks differ from that of the state. It is also understood that conducting detailed risk assessments post-impact and prior to the intervention is a huge challenge in the limited time available. The only way possible is to conduct detailed assessments for the most vulnerable settlements prior to actual extreme events, and investing in early warning systems to avoid disruptions. In addition, have a plan of action prepared in advance for those who could be severely affected or exposed. Making people aware, on regular basis and keeping them involved in the various decision-making processes is pertinent.</p>	
A3.	Nature of Planning	(a) Planned with risk measures (b) Planned without risk measures (c) Unplanned/Organic
	<p>Risk measures such as physical structural stability and use of stronger materials helps improve people’s perceptions of risks. Moving of the location itself in order to reduce exposure seems to have a limited impact on their perceptions and is seen as creating other challenges for them.</p>	
A4.	Level of planned participation	(a) Part of decision-making process (b) Part of planning process (c) Part of implementation (d) Part of long-term management post completion
	<p>People must be included right from the design and planning processes, including decisions of locations, house designs, etc. Their consent is key for beneficial outcomes.</p>	
A5.	Motivation/Nature of Hazard	(a) Post extreme climatic event (b) Loss of land post an extreme event (c) Low-intensity High Frequency events (d) Non-climatic event (tectonic, etc.) (e) Development

	<p>The selected small sample of sites for this study were either motivated by an extreme climatic event (ODRP Rural) or a combination of low-intensity high frequency events and other developmental objectives of slum-upgradation (PP Nagar, Sonia Gandhi Nagar) or alternate use of land (Sevanagar). For climatic risks, alternate early warning systems must be considered before attempting any housing upgradation, particularly R&R. Softer interventions and providing better economic opportunities can also lead to self-investments for improvements in their own developmental outcomes (suggested in Markandi), without the implications of high costs of housing and infrastructure provisions on the state. People often have their own adaptation strategies to deal with risks in areas that experience low-intensity high-frequency hazards, and these must also be considered at the time of assessing interventions. In-situ upgradation (services and/or housing) would be the most beneficial and least expensive in such scenarios, and would also enable participation and buy-in from people.</p> <p>In cases where the primary motivation for moving people is alternate use of land, R&R in any form must not be practised unless acceptable compensations are made. Often, as is suggested in land acquisition literature (Chakravorty, 2013), many of these locations are non-negotiable, and no amounts of compensations will move people.</p> <p>Evicting people from 'useful' land, triggered political motivations, but at the time of disasters is a danger and must be avoided under any circumstance.</p> <p>Although sites where tectonic action is the primary motivation for R&R are not considered within the scope of this research, yet due to lack of scientific early warning systems for avoiding such risks, R&R could be considered as long as other criteria of age of settlement, distances between old and new, participation, etc., are all considered as part of the project design.</p>	
A6.	Level of attribution of CC to hazard frequency and intensity	<ul style="list-style-type: none"> (a) Low (b) Medium (c) High
	<p>Although at the moment, attribution to climate change with the perspective of increasing risks in the future is almost non-existent, suitable models and simulations must be devised to inform design and policy actions in such scenarios for overall and long term risk reduction. Moving people in a way that they continue to stay close to the coasts, for instance, could be re-evaluated with additional plans for future scenarios such as sea-level rise, etc. along with the implications of costs and benefits in various time frames.</p>	
A7.	Primary Decision Maker	<ul style="list-style-type: none"> (a) People (b) Civil Society (INGOs, NGOs, etc.) (c) Government (d) Combination
	<p>While none of the cases studied in India are where the primary decision-maker is any single agency, it is seen that (as is also reflected in A4. above) planned participation of people from the initial stages of the design and decision-making leads to much better overall outcomes (e.g., Markandi and Paradesipalem vs. Sevanagar).</p>	
A8.	Distance between old and new locations	<ul style="list-style-type: none"> (a) 0 to 1 km (b) 1 to 5 km (c) More than 5 km
	<p>As is briefly reflected in A1., distance has a huge impact on the outcomes of the R&R. Least distance between the old and new site, ensures that the lives of the relocated continue with fewer changes, as it is a replica of their life earlier and therefore is least burdensome. Yet, if the implication of hazard exposure due to the location itself continues, it must be dealt with by using other structural and physical measures rather than distancing them from the location, as is reflected in A3. In rural areas, where using public transport is not a normal practice, and walking is the primary means of commuting, no more than 2 km is advised between the old and new sites. In urban areas, even though people are accustomed to using public transport, they may not be able to afford the time and money of commuting long distances, in such cases, up to 5km is acceptable by most.</p>	
A9.	Time between decision and implementation	<ul style="list-style-type: none"> (a) 0 to 1 years (b) 1 to 2 years (c) More than 2 years

	<p>This aspect has had varied implications. In some cases, where the decision and implementation has taken some time (up to 1 year), it has been used as an opportunity by the people to influence decisions in their favour (e.g., MRK) and has potentially led to much better participatory outcomes. In many cases, where the decisions-making is followed by implementation soon after (within 2 months), people have not yet learnt from other's cases, and are left feeling worse-off despite similar provisions (e.g., DLR). In many cases (e.g., ODRP Urban such as Canal Street, etc., discussed in the previous Site Level Reports) there has been no implementation even 2 years after the decision has been made and people seem to have lost interest and faith in any action from the state for their development. Therefore, it is suggested that the plan of action should be made clear from the beginning, with clarity of partners and implementers, along with potential plans for various possible implementation challenges. There should be sufficient time given for people to involve themselves, and once that is achieved, implementation can be phased in a manner that at least small first steps are completed within planned timeframes.</p>	
A10.	Time taken to complete the project	<ul style="list-style-type: none"> (a) 0 to 2 years (b) 2 to 5 years (c) More than 5 years
	<p>Once implementation begins, it is often seen as beneficial to complete the project within the planned time frame. In many cases where project are delayed, costs escalate (labour, material, transport, etc.) and the initial planning may not necessarily hold anymore and must then be re-evaluated.</p>	
A11.	Age of the project (time since completion)	<ul style="list-style-type: none"> (a) Less than 5 years (b) 5 to 10 years (c) More than 10 years
	<p>In many cases, including Sevanagar, it is seen that as time progresses, people come to terms with their new living conditions, despite original resistance to these interventions. However, it is pertinent to note that much is lost within those years, and people are left worse-off than they were to begin with, despite the intervention, and the years lost are also an opportunity cost to them.</p> <p>But in order to study the direct implications of a project, settlements no more than 5 years old must be considered, after which other aspects could start influencing the outcomes and could affect the actual evaluation results.</p>	
A12.	Size of the Project	<ul style="list-style-type: none"> (a) Small (1–100 HH) (b) Medium (101– 500 HH) (c) Large (more than 500 HH)
	<p>Rather than the size, it is seen that the levels of homogeneity must direct the design of the R&R. More heterogeneity, even in a small site such as DLR, if not dealt with on a case by case basis could lead to the creation of unforeseen burdens (as in the case of the low-caste family), while even in large R&Rs such as MRK, as long as the larger needs are taken care of (as in the case of three separate locations for the three broad socio-economic groups), the results can still be positive. (Also refer to B3.)</p>	
A13.	Nature of dividing the population	<ul style="list-style-type: none"> (a) Whole population moved to one place (b) Part of the HH moved together to one place (c) Different settlements in their entirety moved together to one place (d) Different parts of settlements moved together to one place (e) All HH moved but spread in parts (f) Part of HH moved and scattered in different locations
	<p>In most cases, people stated that it did not affect them if individuals from their community still continued to live with them or not, yet it was also observed that in cases where they didn't (as in the case of the low caste lone family in the new site in DLR, or where multiple communities came together in one new location in Uppalapatti), the outcomes seemed to vary. In terms of policy direction, all that can be said is that as long as people are involved in such designs and are agreeable to moving with others, they are most likely to adjust with the final agglomerations. Even so, it is advisable/preferred to retain their homogeneity and previous way of life as far as possible, particularly due to often unknown implicit caste and political dynamics otherwise hard to evaluate.</p>	

A14.	Financing Sources	<ul style="list-style-type: none"> (a) 100 per cent Govt funded (b) 100 per cent Donor/ Civil Society funded (c) 100 per cent Community funded (d) Contribution of funds from different sources but none from the beneficiaries (e) Contribution of funds from different sources including the beneficiaries
	<p>In the select cases, the rural cases were all of type (d) but all the urban were type (e). While it is often advocated by many to have the beneficiaries contribute financially to have some “skin in the game” and thereby enabling participation and involvement, it is also seen that often these financial requirements could become additional burdens, and can lead to excluding those who cannot afford or prioritise such investments. On the contrary, participation can also be enabled by involving people in the construction activity itself, thereby ensuring quality and involvement. This was fairly successful in many cases in ODRP Rural.</p>	
B	Original Settlement-level characteristics	
B1.	Type of land tenancy	<ul style="list-style-type: none"> (a) Owned (b) Right to occupy (c) No explicit/legal rights
	<p>Having access to land tenure is an advantage for the household, particularly in urban areas, as access to land rights acts as a safeguard against evictions and displacement. In cases where the family is occupying government or private land without any explicit legal rights, land title acts an incentive to move to the relocation site. None of the cases we have studied in urban areas have land rights to their old/ original sites. It is only after the intervention that families were given occupation certificates/tenure rights. In the case of rural sites, in ODRP, it is included in the project design that the eligible families will still have access to their old land and will also get the title of the land in the relocation site, which is an additional asset. Beneficiaries have a choice either to build the new house in their old site (provided if it meets the eligibility criteria) or get a house and land in the relocation site, which resulted in less resistance from the beneficiaries.</p>	
B2.	Age of settlement (before the move)	<ul style="list-style-type: none"> (a) 0–5 years (b) 5–10 years (c) More than 10 years
	<p>Most of the families in the six selected sites were living in their original site for more than 10 years. It was clear that the positive outcomes of Markandi and Sonia Gandhi Nagar is because the intervention didn't affect their social and economic networks and livelihoods. In the case of relocation while all the other physical infrastructure can be provided, disturbing their social and economic networks which were established over many years is a major risk created. It is recommended that the moving settlements that were living in a location for more than 5 years should be avoided at all costs.</p>	
B3.	Size of the settlement	<ul style="list-style-type: none"> (a) Small (1–100 HH) (b) Medium (101–500 HH) (c) Large (more than 500 HH)
	<p>Bigger the community, greater the diversity. Smaller communities in comparison are more homogenous socially and culturally, and it is easier to achieve consensus. In medium to large size communities, it becomes more complex for the project/intervention to suit or meet the needs of all the families. More detailed assessments and efforts are required for understanding these needs, which also means longer time frames and budgets. With varying diversity and complexity, the same project design cannot be applicable for both small and large scale settlements. Large communities have also an advantage of resisting the intervention, this can also cause sufficient delays in the project implementation and increasing the cost of the project. (Also refer to A12.)</p>	
B4.	Most dominant nature of livelihood options for HH	<ul style="list-style-type: none"> (a) At home work (b) Travel 0–1km for work (c) Travel more than 5km for work (d) Migrate regularly to other cities/towns for work (e) Migrate seasonally to other locations for work (f) Mixed nature of work

	<p>The nature of livelihoods is an important factor that needs to be well documented and understood before the intervention. The project design should include appropriate methods to rehabilitate or restore their livelihoods and economic patterns. If the same livelihoods cannot be restore based on the existing skills alternative livelihood options needs to be identified.</p> <p>This is clear in all the six selected sites. MRK, SGN, where the existing livelihoods are not affected because of the intervention, have resulted in the positive outcomes. In the case of UPB, DLR, PAP and SEV, because of the relocation and because the project design didn't include the rehabilitation of restoration of livelihoods, most of the families are severely impacted and this resulted in negative outcomes.</p>	
B5.	Level of Hazard Risk Exposure	(a) High (b) Medium (c) Low
	<p>The level of hazard exposure of the original site needs to be studied in detail to design and propose an appropriate intervention. In MRK and UPB where the sites are exposed to cyclonic wind speeds and storm surge, the proposed intervention only reduces the risk to wind speeds while the exposure to storm surge still remains.</p>	
B6.	Type of Urban form	(a) Cluster housing (b) Row Housing (c) Multi-storey Housing
	<p>The type of existing urban form needs to be well documented to understand how people use spaces inside and outside their houses. The houses and spaces are used for selling, manufacturing or storing goods and forms a major part of their income. The way people live in clusters is also an indicator of how they are organised, sometimes based on their work or by caste or religion. These spaces dictate the way people live and have high value in terms of economic and social activity.</p> <p>Not including the aspects of the original form in the new site will have impacts on the way people live and work.</p>	
B7.	Levels of social infrastructure distinguished by provider	(d) Good—provided by the government (e) Good—provided by the civil society (donors, INGOs, NGOs, etc.) (f) Good—self/community created (g) Poor—with contributions from public funds (h) Poor—with contributions from the civil society (i) Poor—self provisions
	<p>Access to social infrastructure affects community well-being. Providing a new house is not enough. Providing infrastructure is an expensive and time taking process. People should only be moved once all the infrastructure facilities are provided in the new site. In the case of Markandi where there was a lot of investment made in improving the social infrastructure by the civil society organisations, by avoiding relocation and providing housing in-situ, investment on recreating all of the infrastructure was avoided. Assessment of existing infrastructure can impact the decision of relocation. Sometimes provision of housing in-situ can be less expensive and quicker (compared to cost of land) than recreating both housing and services.</p>	
B8.	Strength of social networking. Also comment on the nature of networking—language, caste, livelihoods, regional, etc.	(a) High (b) Medium (c) Low
	<p>Social networks are intangible assets and are of high value especially for the poor. This is not limited to the families living in the community but extends beyond. It also plays an important role in informal economy where trade is only between people from the same community and with people with whom the networks are built over many years or sometimes decades. They act as informal safety nets during times of crisis. As seen in Markandi and Sevanagar, this is not disturbed by the project intervention with in-situ design. This could have been avoided in other sites as well if the relocation sites are not more than 5 km.</p>	

	Most dominant form of family structures	(a) Nuclear family with male family head (b) Nuclear family with female family head (c) Joint family with male family head (d) Joint family with female family head
B9.	<p>All the projects aim provide each household with a new house. In most cases, the title of the new house is drawn either in the name of the female or jointly by both female and male. This is an advantage for women, safeguards them, and improves their role in the decision making process of the family. The title in the name of the female could have implications such as increase her risk to physical security, but that cannot be said for sure at this stage of research.</p> <p>In the case of joint families, each household in the family get a new house and this results in splitting up of the families. Those who were dependent on each other, especially the older members of the family, because of the intervention are now separated and have to earn for a living, as they don't live with their children.</p> <p>While each household is considered at the time of beneficiary selection, those members of the family, who are grown up and are going to get married within few years are not considered for allotment. So either by the time the project is complete or within few years after construction, the new house will have two or three households living jointly. This forces people to move out. So it is important in the initial assessment and beneficiary selection to identify and make decisions so the intervention does not lead to multiple risks in the future.</p>	
B10.	Use given to abandoned site. Also comment on who owns, plans and implements the new use—public sector, private sector, communities themselves, etc.	(a) No use planned (b) Planned housing (c) Planned commercial (d) Environmental land use
	Relocation should only be recommended if the original site is being reused for environmental purposes. If it's for other developmental purposes, the impact on the affected families because of the relocation is far costlier than the other benefits generated from the development.	
C	New settlement-level characteristics	
	Level of hazard exposure	(a) High (b) Medium (c) Low
C1.	(Please refer to B5). In the case of Markandi, higher plinths in the new site will protect them from storm surges but the long terms impacts of sea level rise might be a concern considering the proximity to the sea. Broken sewer lines and dumping of garbage within the blocks of Sevanagar have led to contamination of ground water which has caused severe health issues among people. Open drains in Paradesipalem overflows during heavy rains which thereby lead to water contamination. Uppalaputti and Devi Nagar are prone to cyclonic winds and rains, but due to structural interventions, the vulnerabilities may be low. Uppalaputti located on the coast now relocated inland is also safe from the storm surge.	
	Type of land tenancy	(a) Owned (b) Right to occupy (c) No explicit/legal right
C2.	(Please refer to B1). In the case of Markandi, Uppalaputti and Devi Nagar, people have retained their old house and are also given non-alienable patta in the new site which will be an additional asset. However in Paradesipalem, Sevanagar and Sonia Gandhi Nagar people don't have access to their old site and have received non-alienable patta for the new house.	

C3.	Type of new Urban form	(a) Same as what it was before (b) Similar but not exactly the same (c) Absolutely different from the earlier form
C4.	Level of planning and provisions (Good, medium, minimum, none)	(d) Designed housing (e) Roads (f) Public Transport (g) Water and Sanitation (h) Electricity (i) Schools (j) Hospitals or health centres (k) Marketplaces <p>d) <i>Designed housing:</i> In the case of Markandi, people have been able to make significant design changes by sharing walls across the village and making space between houses for their boats and nets. In the case of Devi Nagar, people have been given space and provisions to make modification or extensions to the new house. The G+3 tenements in Sonia Gandhi Nagar are densely populated and people did not seem happy with the quality of construction. In the case of Paradesipalem and Sevanagar, the quality of construction is very poor.</p> <p>e) <i>Roads:</i> Most places have good roads. In Markandi, the VDC is planning to lay new roads. In Sevanagar and Sonia Gandhi Nagar the roads are very good and are along the national highway. People in Paradesipalem mentioned that the internal roads are not very good.</p> <p>f) <i>Public Transport:</i> In Markandi, Sonia Gandhi Nagar, Sevanagar and Paradesipalem, bus services are poor.</p> <p>g) <i>Water:</i> In most places, people have individual water connections. But in Sonia Gandhi Nagar, the overhead head tanks are yet to be installed and people are still dependent on public tap and hand pump for drinking water. In Sevanagar, the quality of water is very bad causing severe health issues among people. Sanitation: All sites have toilets at the household level. In Markandi and Devi Nagar, people have received money under the Swachh Bharat Abhiyan for toilet construction. However in a few places, toilets are unused or used as storage space as no efforts were made to create awareness among people on safe sanitation.</p> <p>h) <i>Electricity:</i> All the sites have access to metered electricity at the household level. In some places like Markandi, Devi Nagar, Sevanagar there are frequent power cuts and no lights in public places.</p> <p>i) <i>Schools:</i> In most places, there are no or very few schools. In Markandi and Devi Nagar, there are only primary schools in the vicinity. In Sevanagar, there are no schools or anganwadis in the vicinity and hence the dropout rates have increased. In Sonia Gandhi Nagar, schools are across the highway and are not accessible.</p> <p>j) <i>Hospitals/ health centres:</i> In Devi Nagar and Sevanagar, there are no hospitals or primary health care centres in the vicinity. In other places people have access to either private or government hospitals, but people in most places wanted better medical facilities.</p> <p>h) <i>Markets:</i> In Devi Nagar, Sevanagar, Sonia Gandhi Nagar and Paradesipalem, there are no/few markets and are not accessible.</p>

Key findings

Some of the key findings of the assessment are as follows:

- There are structural issues that exist in these regions with regards housing conditions, increasing slum populations, their access to services and disease incidence, particularly in the select cities of Andhra Pradesh. Odisha has been struggling with other development indicators such as health and education, which have been improving a lot slower than the national averages. The burden of these living conditions may have a detrimental effect on the developmental gains made by various other investments in health and education outcomes, and must therefore be addressed on priority, without adversely impacting other indicators such as access to livelihoods and other social services.
- While the overall physical outcomes of these resettlement interventions are better than other outcomes, residents are still unable to access basic needs and services (quality and reliability of drinking water sources, solid waste management, reliable public transport and early warning systems) adequately.
- Both social and economic outcomes have been seen to improve only in instances of in situ resettlement or in cases where the relocation distance is minimal.
- Environmental outcomes have no particular pattern, but need to be understood within the context of the site, including exposure to hazards and the dependence of people on available natural resources.
- The overall quality of life outcomes (understood in terms of people's ability to access various resources) seem to have become worse in almost all cases, particularly where people have had to forfeit their previous entitlements (such as BPL cards, etc.). In many cases, while new risks have not been created, older constraints continue to affect access to various basic services in the new sites, thereby contributing to the opportunity cost.
- The most beneficial and least costly outcomes are experienced when all aspects of original life are replaced or recreated on a one-is-to-one basis. This is most evident in the case of in situ resettlement, which has the best outcomes, although there is a need to include proper temporary housing options or rental support in the in situ design implementation. Relocation is recommended only in cases where in situ upgradation is not possible, and the distance between the old and new sites is minimal (less than 2 km in rural areas and less than 5 km in urban areas), such that continuity of life services can be maintained, even if the provision of new services is not planned.
- People who have lived in locations that have been deemed 'untenable', for more than 5 years, tend to develop adaptation strategies to deal with those risks. The relocation of such settlements should be avoided at all costs, since it tends to increase the socio-economic burden on the people as well as the city at large.
- Although at present, the role of climate change in increasing future risks is barely acknowledged, suitable models and simulations must be devised to inform design and policy actions towards overall and long term risk reduction.

- In addition to the size of the settlement, the level of homogeneity must determine the design of a Rehabilitation and Resettlement project. Heterogeneity in small sites, if not dealt with on a case-by-case basis, can lead to the creation of unforeseen burdens, while in large R&R projects, as long as the larger needs are taken care of, the results can still be positive.
- While it is often advocated to have the beneficiaries contribute financially so that they have some 'skin in the game', thereby enabling participation and involvement, we have observed that in many cases this causes financial burden and can lead to the exclusion of those who cannot afford to prioritise such investments. A good alternative is to have people participate in the construction activity, which ensures both quality and involvement.
- Land tenure is still contested in urban areas, whereas in rural areas where land tenure is secured within the project, outcomes are seen to be a lot more positive.

Bibliography

- Berhampur Municipal Corporation. (2009). City Profile : Population and Statistics. Retrieved 15th July, 2015, from http://www.berhampur.gov.in/Demographic_Feature.asp
- Beverly, S. G., McBride, A. M., & Schreiner, M. (2003). A framework of asset-accumulation stages and strategies. *Journal of Family and Economic Issues*, 24(2), 143-156.
- Carter, M. R. (2007). What we can learn from asset-based approaches to poverty. *Reducing global poverty: The case for asset accumulation*, 51-61.
- Census of India. (2011). Primary Census Abstract.
- Cernea, M. M. (1999). *The economics of involuntary resettlement: Questions and challenges*: World Bank Publications.
- Chakravorty, S. (2013). *The price of land: acquisition, conflict, consequence*. OUP Catalogue.
- Cook, S. (2007). Addressing Vulnerability through Asset Building and Social Protection '. *Reducing global poverty: The case for asset accumulation*, 104-121.
- Correa, E. (2011). *Preventive Resettlement of Populations at Risk of Disaster: Experiences from Latin America*: Global Facility for Disaster Reduction and Recovery.
- Dani, A. A., & Moser, C. (2008). *Assets, livelihoods, and social policy*: World Bank Publications.
- GoO. (2013). *District Human Development Report, Ganjam: Poverty and Human Development Monitoring Agency (PHDMA), Planning and Coordination Department, Government of Odisha*.
- Jha, A. K., Barenstein, J. D., Phelps, P. M., Pittet, D., & Sena, S. (2010). *Safer Homes, Stronger Communities: A Handbook for Reconstruction after Natural Disasters*: The World Bank.
- McGranahan, G., & Satterthwaite, D. (2014). *Urbanisation concepts and trends*: IIED Working Paper. IIED, London.
- Moore, A., Beverly, S., Sherraden, M., Sherraden, M., Johnson, L., & Schreiner, M. (2001). *Saving and asset-accumulation strategies used by low-income individuals*. St. Louis, MO: Center for Social Development, Washington University in St. Louis.
- Moser, C. (2006). *Asset-based approaches to poverty reduction in a globalized context*. *Global Economy and Development Working Paper(01)*.
- Moser, C. (2011). A conceptual and operational framework for pro-poor asset adaptation to urban climate change. *Cities and Climate Change*, 225.
- Moser, C., & Felton, A. (2007). *The construction of an asset index measuring asset accumulation in Ecuador*. *Chronic poverty research centre working paper(87)*.
- Moser, C., & Stein, A. (2011). *Implementing urban participatory climate change adaptation appraisals: a methodological guideline*. *Environment and Urbanization*, 23(2), 463-485.
- Moser, C. O. (1998). *The asset vulnerability framework: reassessing urban poverty reduction strategies*. *World development*, 26(1), 1-19.
- Moser, C. O. (2015). *Gender, Asset Accumulation and Just Cities: Pathways to Transformation*: Routledge.

Nam, Y., Huang, J., & Sherraden, M. (2008). Asset definitions. *Asset building and low-income families*, 1-31.

Satterthwaite, D., & Tacoli, C. (2003). *The urban part of rural development: the role of small and intermediate urban centres in rural and regional development and poverty reduction*: IIED.

Schreiner, M., Sherraden, M., Clancy, M., Johnson, L., Curley, J., Grinstein-Weiss, M., . . . Beverly, S. (2001). *Savings and asset accumulation in individual development accounts*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Schreiner, M., Sherraden, M., Clancy, M., Johnson, L., Curley, J., Zhan, M., . . . Grinstein-Weiss, M. (2005). *Assets and the poor: Evidence from individual development accounts. Inclusion in the American dream: Assets, poverty, and public policy*, 185-215.

Sen, A. (1981). *Poverty and famines: an essay on entitlement and deprivation*: Oxford university press.

Sherraden, M. (2001). *Asset building policy and programs for the poor*. Paper presented at the *Assets for the poor: The benefits of spreading asset ownership*.

Sherraden, M., & Sherraden, M. (2008). *Asset building: Integrating research, education and practice*. *Advances in Social Work*, 1(1), 61-77.

Sherraden, M. S., Huang, J., Frey, J. J., Birkenmaier, J., Callahan, C., Clancy, M. M., & Sherraden, M. (2015). *Financial capability and asset building for all (Grand Challenges for Social Work Initiative Working Paper No. 13)*. Cleveland: American Academy of Social Work and Social Welfare.

Sherraden, M. W. (1991). *Assets and the Poor*: ME Sharpe.

Signe-Mary, M., & Sherraden, M. (2008). *Asset building and low-income families*: Washington, DC: The Urban Institute Press.

Solimano, A. (2006). *Asset accumulation by the middle class and the poor in Latin America: political economy and governance dimensions*: ECLAC.

Tacoli, C., McGranahan, G., & Satterthwaite, D. (2008). *Urbanization, poverty and inequity: Is rural-urban migration a poverty problem or part of the solution. The new global frontier: Urbanization, poverty and environment in the 21st century*, 37-53.

Appendices

Appendix 1: Review of Literature on Asset Accumulation

Author (citation)	Framework	Relationship explained	Key argument
(Moore et al., 2001)	It explains the saving and asset-accumulation processes	There is a causal relationship between savings and stages of asset accumulation, with respect to strategies used by individuals	Institutions always hold certain socio-economic and power relations to influence the accumulation process
(Beverly, McBride, & Schreiner, 2003)	It explains the asset accumulation process in three stages	This study shares that savings have a huge impact on asset accumulation	Individuals use psychological and behaviour life cycle, as strategies to save money
(Solimano, 2006)	The asset accumulation approach deals with asset formation and social interaction	This study highlights the nature of asset accumulation in middle class families. It explains the nexus between social protection and self-insurance.	It argues that individuals with a stronger asset position can develop mechanisms of self-insurance and become less dependent on social insurance for protecting themselves against negative shocks.
(C. Moser & Felton, 2007)	The Asset Index captures the aggregate value of various assets into a single variable.	The nature of social relations within households and institutional structures, influences the community wellbeing.	Social relations at the household level act as safety nets and create opportunities to generate income
(Dani & Moser, 2008)	The sustainable livelihoods framework and asset building framework	The assets-institutions-opportunities nexus.	The whole process involves both institutions and opportunities, by which individuals choose to have their own strategies.
(C. Moser & Stein, 2011)	Asset vulnerability framework.	It shows the nexus between vulnerabilities and the capital assets.	It shows how different individuals and groups such as households, small businesses, and communities could be impacted by different vulnerabilities.
(C. Moser, 2011)	The asset adaptation framework	It explained the nexus between climate change adaptation and the erosion of assets of the poor. It identified the connection between vulnerability and the erosion of assets.	Asset adaptation and resilience strategies help households and communities to acquire opportunities to resist and recover from the negative effects of climate change.
(C. O. Moser, 2015)	Gendered asset accumulation framework	The relationship between the two genders, assets and cities defined from an asset perspective. The relationship between assets, empowerment, and transformation would result in socially just cities.	In the process of asset accumulation, there would be revalorisation, transformation, and renegotiation of assets associated with change in time.
(M. S. Sherraden et al., 2015)	Financial capability and asset building framework.	It explains the relationship between people and social institutions. It connects the institution of knowledge, skills, access to services, and opportunities.	The role of social work in asset building, where the relationship between people and social institutions obtain much significance.

Appendix 2: Bibliography for Risk Assessment

Annez, P C., Bertau, A., Bertaud, M A., Bhatt, B., Bhatt, C., Patel, B., Phatak, V (2012). Ahmedabad - More but Different Government for 'Slum Free' and Livable Cities. World Bank Policy Research Working Paper 6267.

This paper studies aspects of the real estate market over the past decade in Ahmedabad, India, with an outlook on improving the living condition of slum dwellers. Census data, Slum household surveys, and National Sample Survey has been combined in this study in order to review the market demand. To estimate the production of formal and informal housing over the past 10 years, satellite photography was used. A detailed study of the Ahmedabad development plan, maps the history of housing supply in the city. All these analyses have been used to assess the feasibility of various methods to achieving 'slum free' cities, under the Rajiv Awas Yojana. This paper concludes that a significant increase in public housing production and a provision of subsidised formal homes from governments or through reservations in private developments, would take more than a generation of slum population to handle. This paper suggests that addressing rural-urban land conversion and land tenure issues can help in providing affordable housing for low and moderate income households.

Cernea, M.M (1999). The economics of involuntary resettlement. Questions and challenges. World Bank.

This volume contributes to a broad policy and debate about reorienting the development model towards social development and inclusion, by focussing on the need to bridge the gap between economic and social knowledge, in addressing the challenges faced by many development projects. The authors of this volume bring together economics, sociology, anthropology, and political science to debate for an organic collaboration and mutual reinforcement between social and economic knowledge in resettlement work. This volume explores policy issues and issues pertaining to procedures of economic planning and analysis, methods for valuation, cost identification, resource allocation, and benefit distribution. The first chapter examines the present social and economic research on resettlement. The second chapter looks at the methodological issues in financial and economic analyses of involuntary resettlement. Using the methodological analyses, the third chapter discusses the practicalities of resettlement planning. Based on the experiences of Latin American countries, the fourth chapter discusses the economic sectors of urban resettlement. The fifth chapter focusses

on reduction of poverty in resettlements in India. The last chapter explores benefit-sharing issues in forced relocation.

Jha, A.K., Barenstein, J D., Phelps, P M., Pittet, D., Sena, S (2010). Safer Homes, Stronger Communities. A Handbook for Reconstructing after Natural Disasters. World Bank.

The handbook was developed to help policy makers make critical decisions on how to help people reconstruct their houses and communities, post a natural disaster. Though certain decisions of reconstruction begin immediately, there are long term impacts pertaining to changing the lives of victims of disaster for years to come. Policy makers are responsible for establishing a policy framework either for the entire reconstruction process or for setting reconstruction policy in just one sector. The handbook is emphatic about the importance of establishing a policy to guide reconstruction. This handbook also clearly demonstrates that an effective reconstruction policy improves the effectiveness and efficiency of the reconstruction process. The handbook also describes managing stakeholder's communications, monitoring the implementation and outcomes of the reconstruction processes and improving policy consistency.

Jimenez, E. (1983). The Magnitude and Determinants of Home Improvement in Self-Help Housing: Manila's Tondo Project. Land Economics, Vol. 59, No. 1. 70-83

This paper has proposed and implemented methods for measuring net changes in the stock of housing in self-help housing projects. Before implementation of a large scale self-help project in Manila, hedonic coefficients were estimated from an equation relating house value to the characteristics of dwelling units. By using the characteristics of dwelling units few months after implementation these coefficients are used to predict housing value after project implementation.

Jimenez, E (1984). Tenure security and urban squatting. The review of economics and statistics, Vol. 66, No. 4, 556- 557.

Though 35 per cent of the Third world population live in squatter settlements, there is little or no study on the economic analysis of these. This paper aims to study the gap. The equilibrium model argues that the difference in the unit pricing of houses between the non-squatting and squatting sectors of the city reflects the association with a secure status of tenure. This paper uses hedonic price techniques to derive the average premium on tenure security in Davao, Philippines. The difference

in equilibrium prices were greater for larger household sizes, lower income communities, and households with younger heads for owners and older heads for renters.

Kaufmann, D and Quigley, J.M (1987). The consumption benefits of investment in infrastructure. The Evaluation of Sites-and-Services Programs in Underdeveloped Countries. Journal of Development Economics 25 (1987) 263-284.

The validations for housing subsidy programs in developing countries depend upon increasing indirect benefits in the form of improved employment opportunities, health, etc., to program participants. The empirical analysis in this paper has formulated a method for deriving the Hicksian benefits of sites and services, and slum upgrading projects in developing countries. The methodology is used to the net benefits of the sites and services project and the results suggest that direct benefits of such programs are substantial.

PNPM-Urban (2013). Indonesia: Evaluation of the Urban Community Driven Development Program. Program Nasional Pemberdayaan Masyarakat Mandiri Perkotaan. Policy note.

The PNPM-Urban is a community driven programme which provides funding for small scale infrastructure projects, aimed at social and economic development to the urban poor settlements in Indonesia. This programme is a major part of the country's poverty reduction strategy and national urban strategy. This policy note draws on two qualitative field studies in order to assess how the program is working particularly for infrastructure projects and also to document good practice and identify options for programme improvement. The findings from these studies have been positive. Feedback from beneficiaries indicates that the programme has been effective for addressing basic infrastructure issues at the community level and has strengthened community participation approaches. Studies also identified a few areas under the programme which can be improved. This included MIS systems, strengthening project activities for social and economic needs, more women participation, etc. Recommendations from the pilot ND program are also being addressed under the preparation of PNPM-IV urban program. Other issues related to the country's medium to longer term needs based on rapid urbanisation and projected increase in urban poverty and the role of PNPM-Urban program has also been explored in this study.

Romijn, G and Renes, G (2013). General guidance for cost benefit analysis.

Cost and Benefit Analysis (CBA) is a systematic approach to estimate strengths and weaknesses of measures, presented as the sum of benefits minus cost. This CBA guidance document describes how to prepare CBA. This document also derives a number of rules and guidelines for CBA from theory and best practices which are flexible enough to be used in all fields. The emphasis is on the correct application of the principles of CBA rather than the implementation of a permanent set of procedures.

Takeuchi, A., Cropper, M., Bento, A (2006). The Welfare Effects of Slum Improvement Programs. The Case of Mumbai. World Bank Policy Research Working Paper 3852.

This paper evaluates the welfare effects of slum improvement programmes using data for Mumbai, India. In order to evaluate welfare schemes, estimation of models of choice of residential location is required. This paper uses data for 5000 households in Mumbai. Houses are described by a vector of housing characteristics and by the characteristics of the neighbourhood within a 1km radius of the house. Ethnic composition and accessibility to workplace are considered as the most important neighbourhood characteristics. This paper uses employment access as the factor influencing residential location choices. Other endogenous amenities of neighbourhood, particularly language and religion, and heterogeneity in housing and neighbourhood attributes have also been incorporated in this study.

Appendix 3: Bibliography for asset accumulation

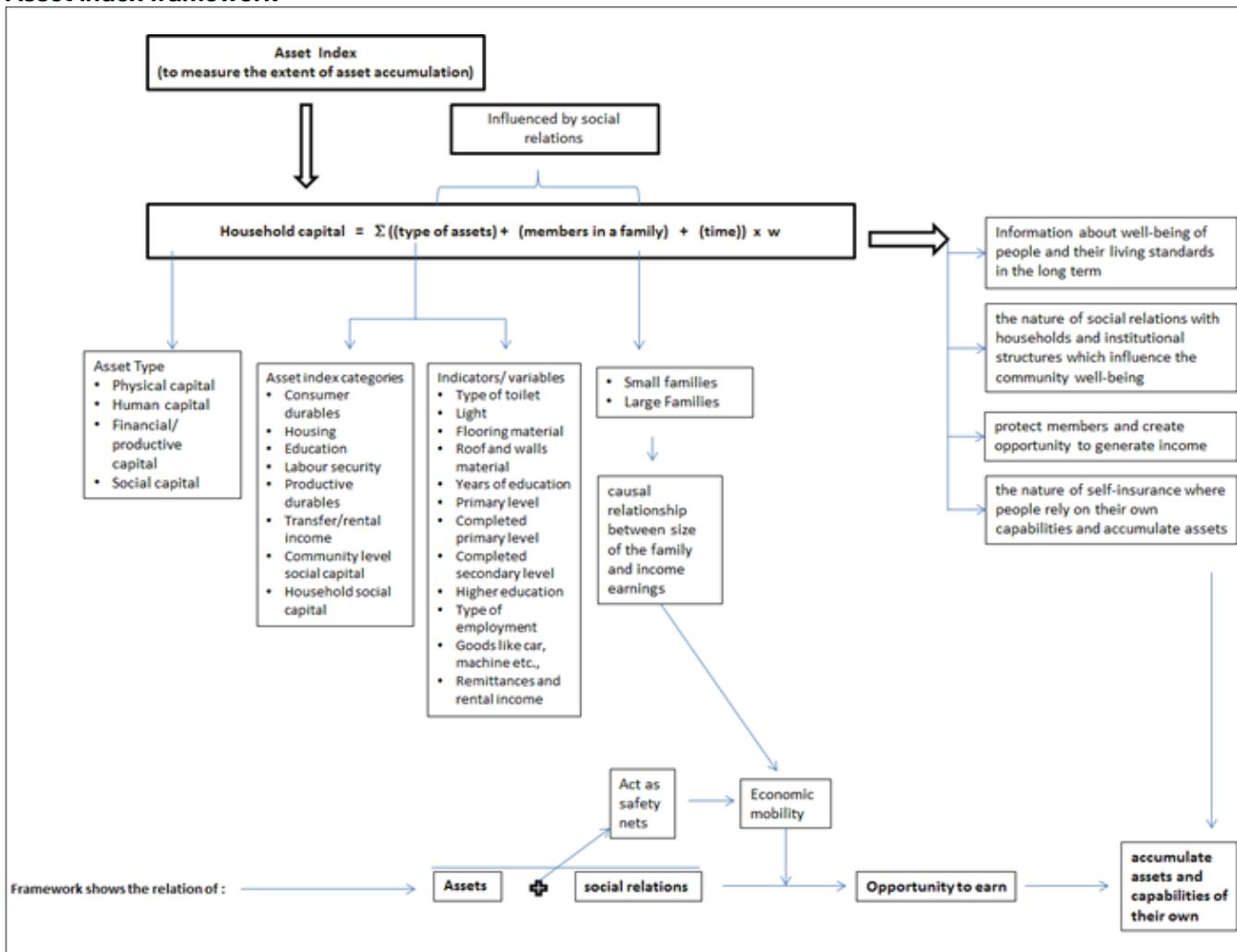
Moser, C., & Felton, A. (2007). The construction of an asset index measuring asset accumulation in Ecuador. Chronic poverty research centre working paper, (87)

The research discusses an approach to measure assets and gives an overview of various discussions on asset based approaches. In this study, Moser & Felton (2007) have developed an asset index, which was an outcome of longitudinal study conducted in Guayaquil, Ecuador. The research methodology captures the aggregate value of various assets into a single variable. Understanding the nature of social relations among households and their interactions with existing institutional structures was the key objective of this study. This nexus establishes a causal relationship with economic mobility and stimulates community well-being. This paper provides a good overview of developing index methodology. The asset index model indicates that household capital is directly proportional to the type of asset held by each member of the household for a particular time period. It

highlights that social relations at the household level act as safety nets when people are exposed to vulnerability and during post disaster recovery. Such social safety nets would protect members and create opportunities to generate income. The study further highlights that large families have an advantage when it comes to asset accumulation despite the fact that the proportion of earnings to be shared among the number people is high.

However, accumulation and longer-term consolidation of assets, is often overlooked. This research addresses the sustainable livelihoods framework and asset building framework. It highlights and compares the advantages of AB framework with SL framework. According to Moser, social protection policies protect the poor or vulnerable against adverse effects, risks and erosion of assets. Whereas, an asset based social policy aims to create more opportunities for asset accumulation. In

Asset index framework

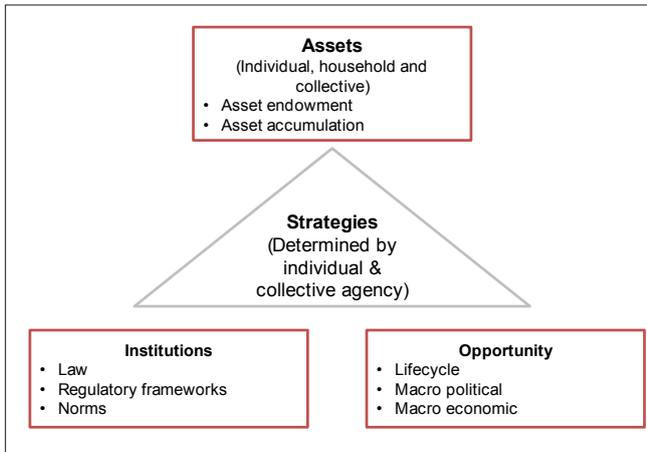


Moser, C. O., & Dani, A. A. (Eds.). (2008). Assets, livelihoods, and social policy. World Bank Publications.

In the global south, there has been a significant shift in poverty focussed policies from poverty alleviation strategies (welfare based approach) to social protection and poverty reduction strategies. In this context, the new social policy elucidates the relationship between assets and capabilities. This research argues that holding assets and capabilities are minimal necessities for an individual to improve wellbeing at the household level.

the asset building framework Moser (2011) discusses about the assets-institutions-opportunities nexus. This framework explains assets such as human capital and physical capital as first-generation accumulation of assets, and, first-generation asset-based policies concentrate on provision of social, physical, and economic infrastructure facilities for low-income families. These interventions are essential to support low-income families to accumulate assets (i.e., human capital, physical capital, and financial capital). The assumption is that the accumulation of such assets generates income and capability to act. This set a pre-condition for low-

income families to further accumulate assets on their own and come out of poverty.



Solimano, A. (2006). Asset accumulation by the middle class and the poor in Latin America: political economy and governance dimensions. ECLAC.

This study examines the nature of asset accumulation in middle class families. According to Solimano (2006), with the ownership of assets, poor families could contribute to foster economic conditions, improve economic wealth distribution, and political stability. Here, the concept of the asset accumulation approach deals with asset formation and social interaction. It emphasises on how social interaction and social support would help individuals recover from adverse conditions. This paper further highlights the nexus between social protection and insurance. In this study potential socio-economic outcomes commonly seen in middle-class families are emphasised. It argues that individuals with a stronger asset position can develop mechanisms of self-insurance and become less dependent on social insurance for protecting themselves against negative shocks.

Beverly, S. G., McBride, A. M., & Schreiner, M. (2003). A framework of asset-accumulation stages and strategies. Journal of Family and Economic Issues, 24(2), 143-156.

Beverly, McBride & Schreiner framework explains the asset accumulation process in three stages. This study shares that savings have a huge impact on asset accumulation, when income exceeds a consumption level when an individual obtains the ability to hold or use resources. Of the three stages, the first stage of asset accumulation refers to investment or income flows i.e., current inflows need to be more than outflows. In the second stage there is a shift in the pattern of the individual's monthly expenditure, this is known as the conversion stage. The third stage refers to

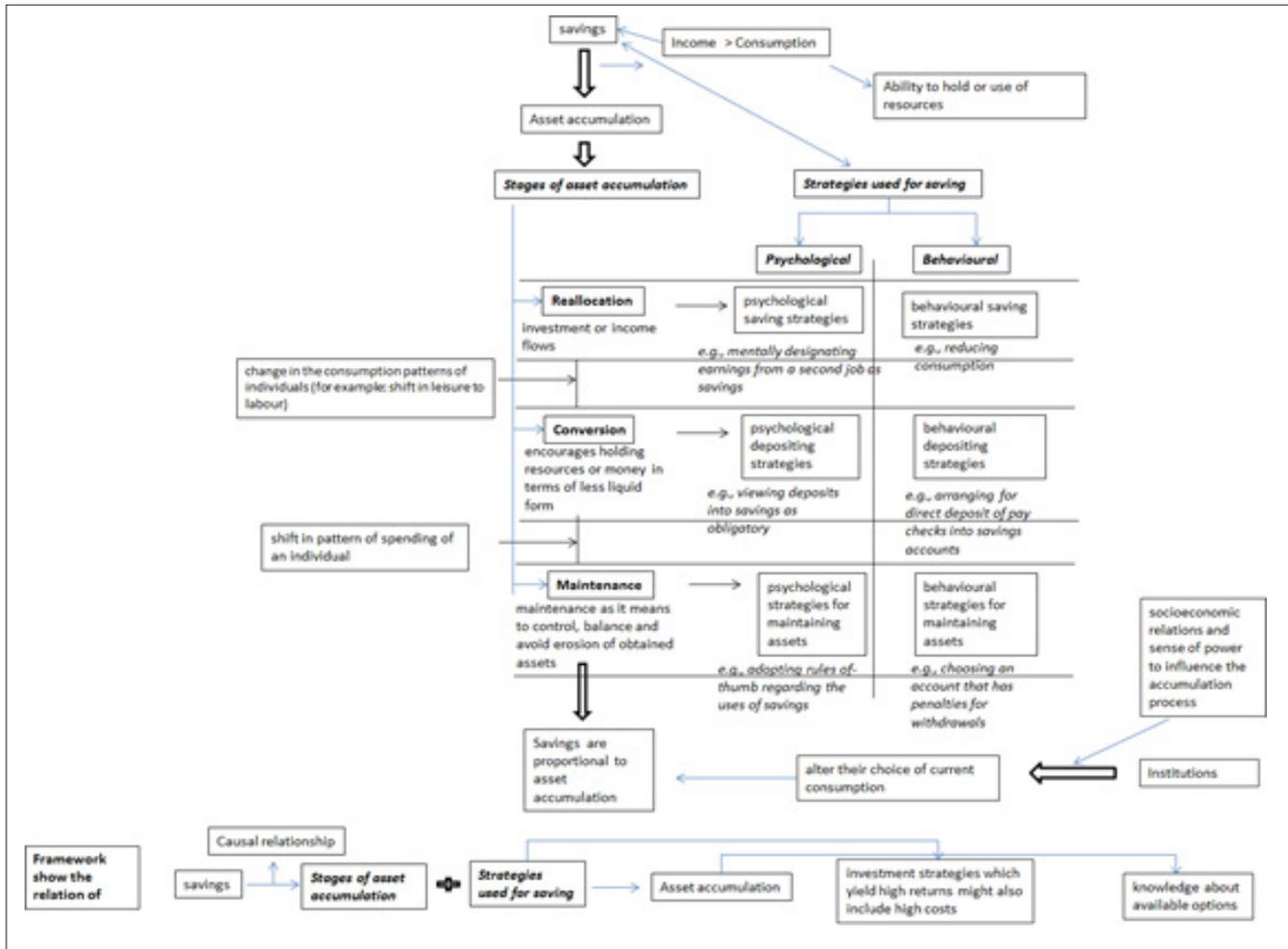
savings, which is proportional to asset accumulation. This stage is known as maintenance, as it serves to control, balance, and avoid erosion of obtained assets. Beverly, McBride & Schreiner noted that individuals use psychological and behaviour life cycle as two strategies to save money. In some situations, these strategies may produce negative outcomes. The framework further focusses on outcomes based on behavioural life-cycle and psychology, the two saving strategies. It is known as savings building, and is possible when an individual uses both strategies in each stage. It concluded that particularly reallocation strategies and conversion strategies would ensure that individuals accumulate assets.

Moore, A., Beverly, S., Sherraden, M., Sherraden, M., Johnson, L., & Schreiner, M. (2001). Saving and asset-accumulation strategies used by low-income individuals. St. Louis, MO: Center for Social Development, Washington University in St. Louis.

In this research, the Moore et al framework explains that saving and asset-accumulation processes are more impacted by institutions either formal or informal. Institutions maintain certain socio-economic relation and display a sense of power to influence the accumulation process used by individuals. Moore et al (2003) said that savings or investment strategies which yield high returns might also include high costs. As a result, there is a pattern where individuals avoid high return strategies to avoid such costs. The Moore et al (2003) research concludes by stating that "asset-accumulation is a process" which involves both time and resources. The resources employed could be "knowledge about available options of how to manage the process."

Beverly, Schreiner and Sherraden framework on asset-accumulation

Whereas, asset accumulation refers to self-insurance, it encourages a bottom-up approach, where individuals,

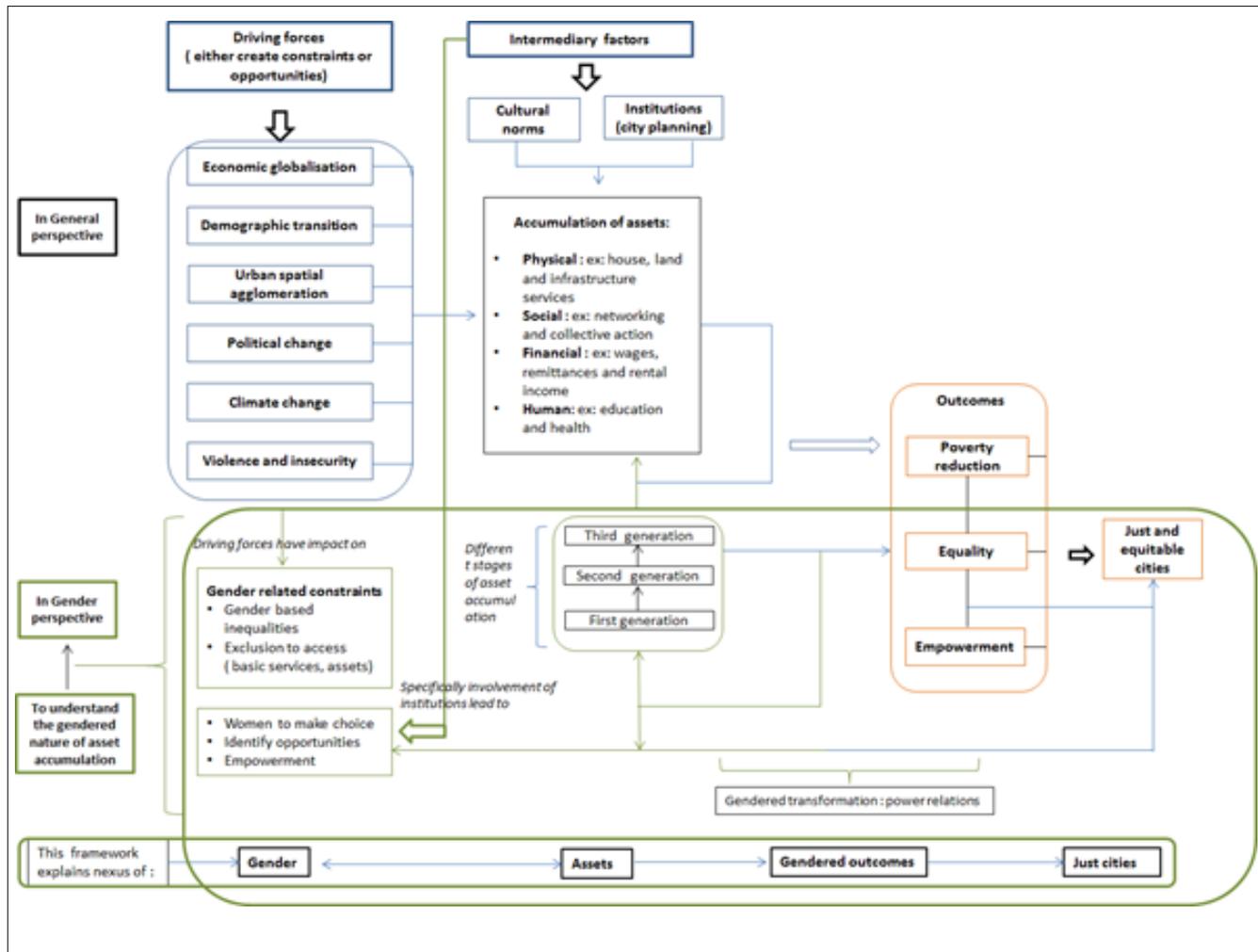


Moser, C. O. (Ed.). (2015). Gender, Asset Accumulation and Just Cities: Pathways to Transformation. Routledge.

This research helps understand the gendered nature of asset accumulation. It explains the nexus of gender, assets, and just cities. The two perspectives discussed in the gendered asset accumulation framework, where the relationship between gender and just cities are defined from an asset perspective. Of which, one perception connotes the gender constraints like discrimination, inequality, and exclusion in access to accumulation of asset etc., and the second perception deals with the involvement of institutions which would allow women to make a choice and empower themselves. These two pathways lead to poverty reduction, increased equality, and most effectively transform gendered power relations. The asset building concept refers to the provision through state level institution structures, which support poor families to accumulate assets and move out of poverty.

households, and communities have a major role as compared to a state level institution. It explains beyond the concept of savings which convey that creating opportunities for low-income families to accumulate assets would further allow them to build assets on their own. Asset accumulation is explained through stages as first, second, and third generation with certain employed strategies. The ownership or a house interpreted as an asset has an economic and social value to it. Thus, outcomes could be safety, security, change in domestic tension, violence, etc., and this transforms the identity and power of women. The second and third generation would have accumulated more human capital than the first generation. As far as institutions are involved, this change is an outcome of the relation between assets, empowerment, and transformation.

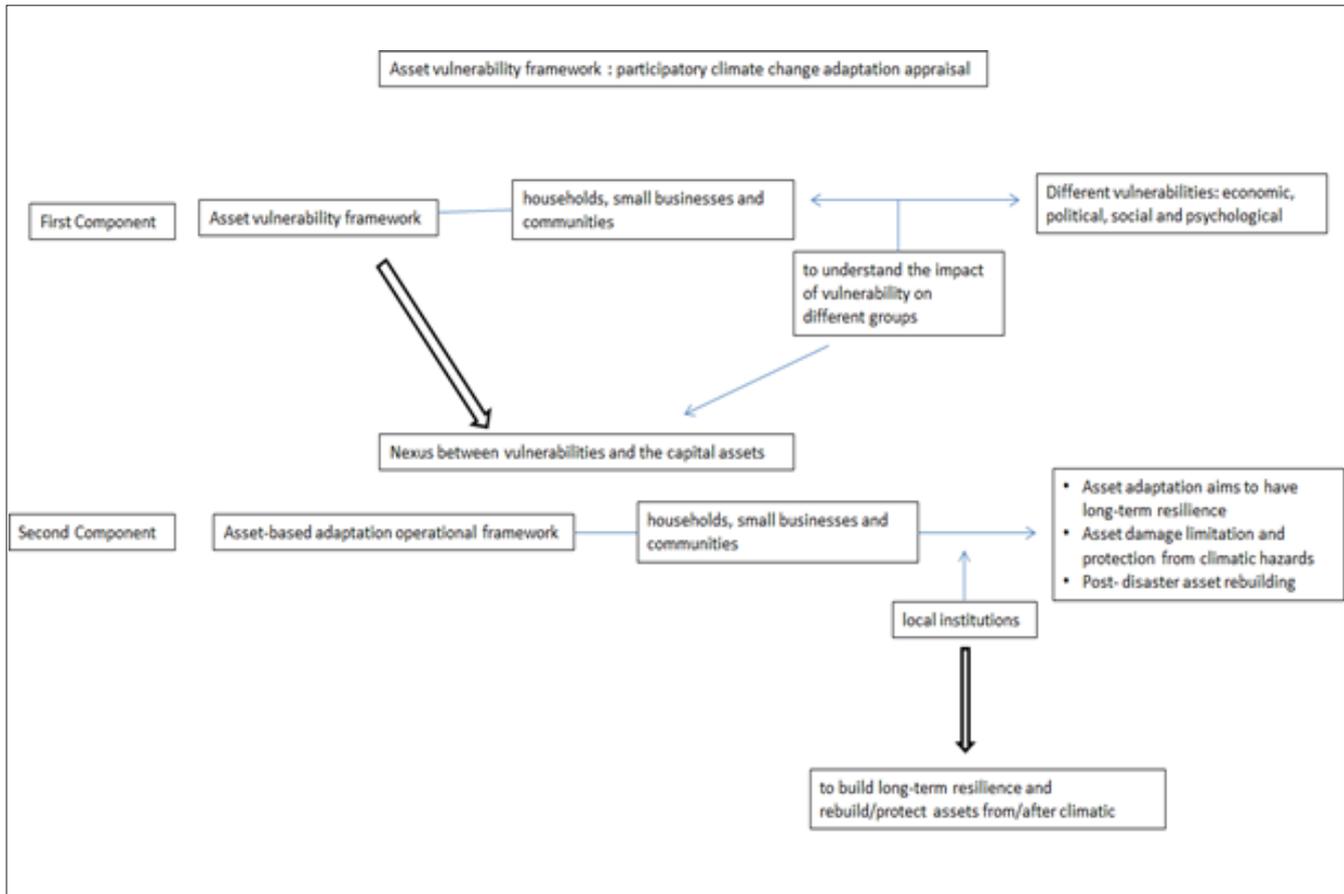
Gendered asset accumulation framework



Moser, C., & Stein, A. (2011). Implementing urban participatory climate change adaptation appraisals: a methodological guideline. *Environment and Urbanisation*, 23(2), 463-485.

This research gives an overview of the asset vulnerability framework. The asset vulnerability framework shows how different individuals and groups such as households, small businesses, and communities could get affected by different vulnerabilities. This study explains the nexus between vulnerabilities and the capital assets. The outcomes of the participatory climate change adaptation appraisal (PCCAA) study, conducted in Mombasa (Kenya) and Estelí (Nicaragua) show that three types of vulnerabilities are significant to understand how various groups respond to severe climatic conditions. Of the three types, physical vulnerability is one. This focusses on inadequate provision of

infrastructure services such as sewerage, drainage, and waste collection. Second one is legal vulnerability which focusses on “land tenure rights, with implications for settlement location, lack of settlement planning and post-severe weather infrastructure support”. The third one is social vulnerability which includes the groups that are exposed to climate related risks. The second component of this framework explains the asset-based adaptation operational framework. This approach seeks to understand various asset-based adaptation strategies adopted by households, local businesses, and communities. Here the essential focus is on how local institutions engage in helping people to build long-term resilience and rebuild/protect assets from pre and post climatic events. These are concluded from the “research discussions and analysis of the asset vulnerability, asset adaptation, and climate change nexus”.



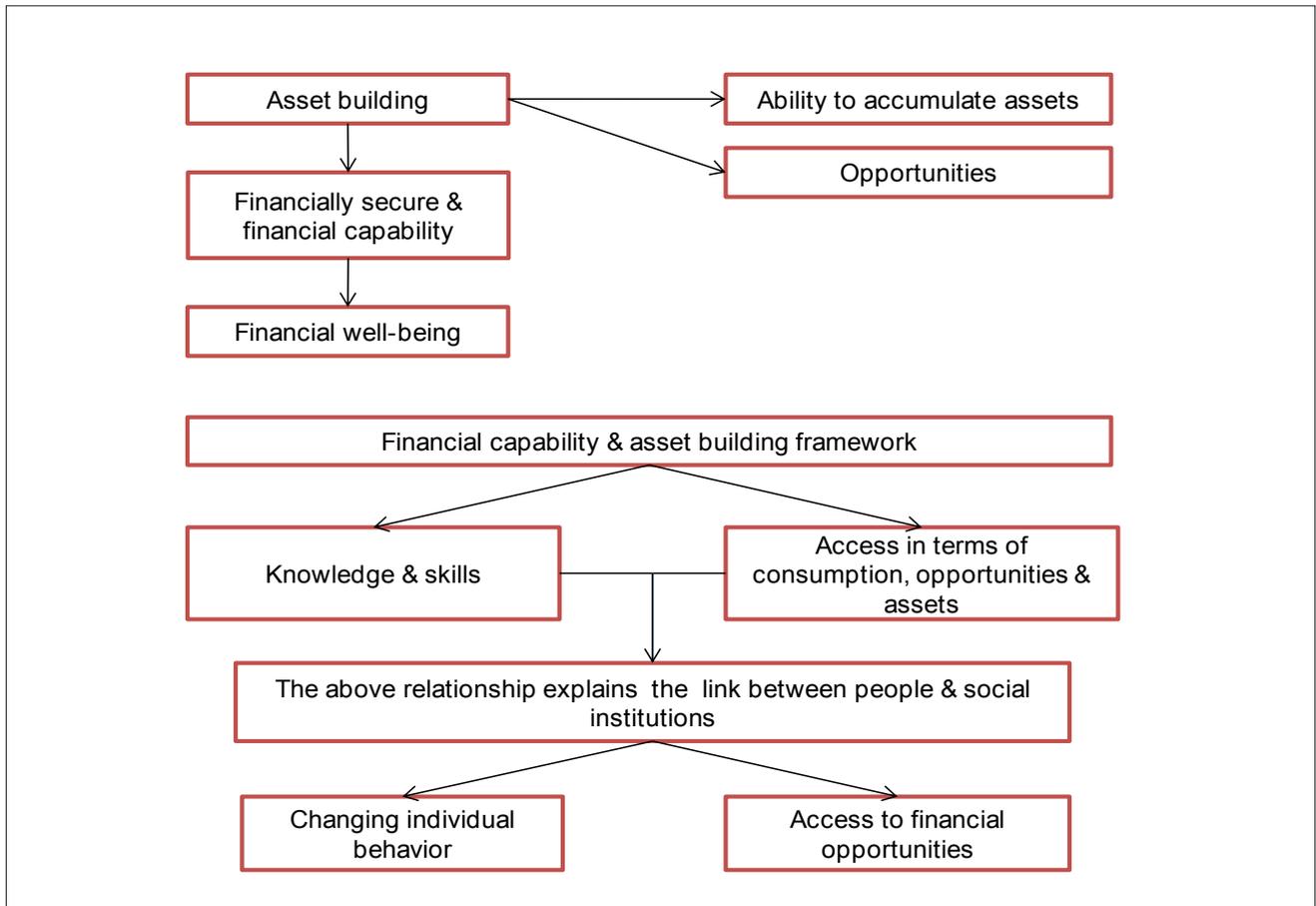
Sherraden, M. S., Huang, J., Frey, J. J., Birkenmaier, J., Callahan, C., Clancy, M. M., & Sherraden, M. (2015). Financial Capability and Asset Building for All.

building and where the relationship between people and social institutions obtain much significance.

This research suggests two significant components for attaining financial capability and building assets. One component refers to knowledge and skills and other one refers to access in terms of consumption, opportunities and assets. Financially capability refers to further changes in an individual behaviour which tries to reflect on the “relationship between people and social institutions”. This framework argues that financial capability could improve through changing individual behaviour and increase in access to financial opportunity with changing institutions. The research proposed two strategies for asset building. The first strategy suggests the use of either social security or other life and non-life insurance schemes to protect themselves. The second strategy deals with providing information about investment plans and access to web-based financial services automatically after enrolment. The conceptual framework links the institution of knowledge, skills, access to services and opportunities. The overall framework defines the role of social work in asset

Financial capability and asset building framework

identifies the range of top-down interventions made by external actors at the city and national level, such as

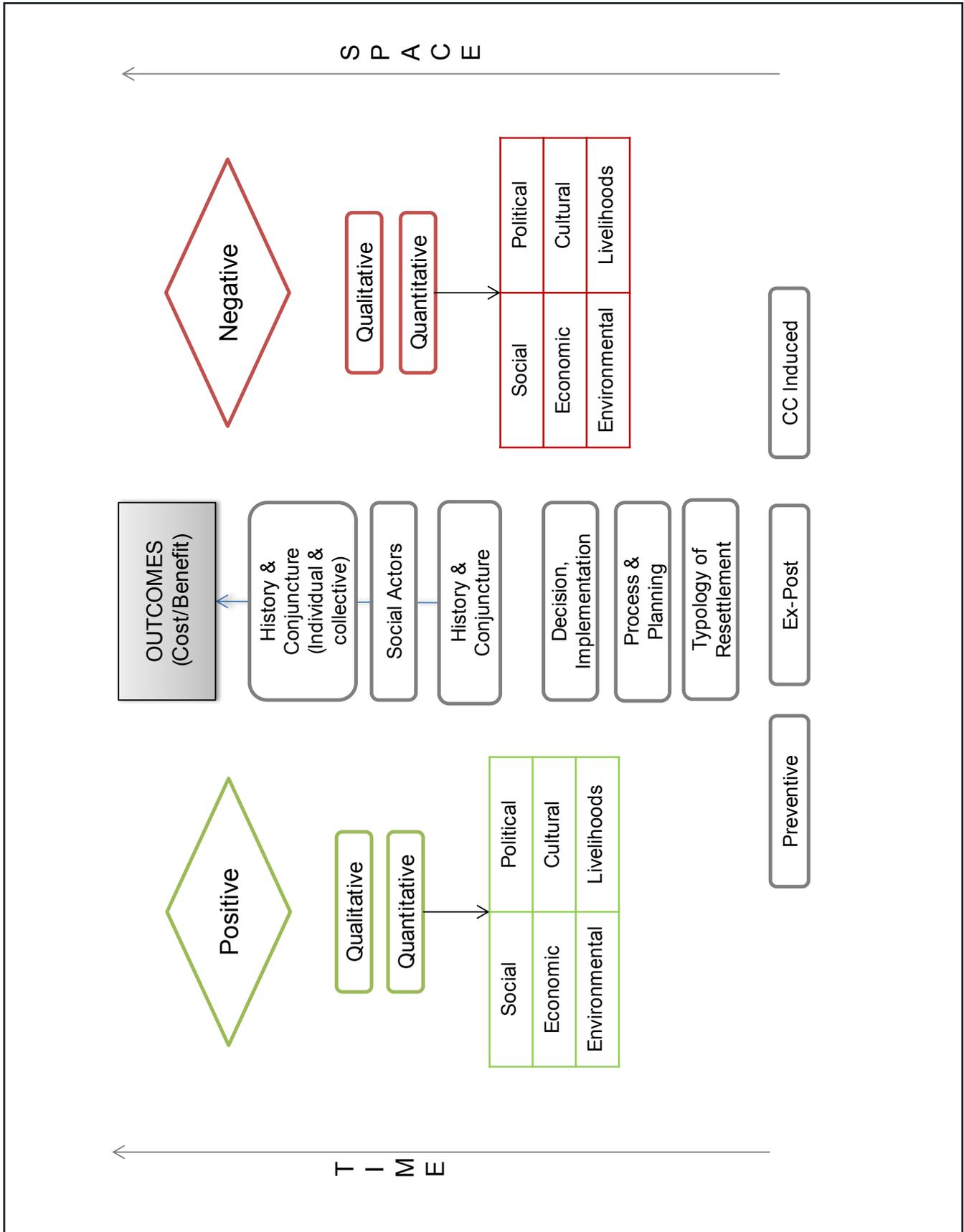


Moser, C. (2011). A conceptual and operational framework for pro-poor asset adaptation to urban climate change. Cities and Climate Change, 225.

This research gives an understanding about the nexus between climate change adaptation and erosion of assets. The asset adaptation framework suggested in this research are explained through two components: an asset vulnerability analytical framework and an asset adaptation operational framework. Climate induced risks and vulnerabilities could be evaluated by identifying the variation in risk of exposure to hazards and capacity to recover from damage caused. The asset vulnerability analytical framework identifies the connection between vulnerability and erosion of assets. The extent of vulnerability is correlated to number of asset holdings and outcomes when there are no assets. Reconstruction is a period in which either entitlement can be re-negotiated to improve the capacity and wellbeing of the poor or poverty and inequality can be entrenched through the corresponding reconstruction of vulnerability. The asset adaptation operational framework identifies a range of bottom-up climate change adaptation strategies that individuals, households and communities have developed to cope with climate change. It also

municipalities, civil society organisations, and the private sector. This framework concludes that households and communities use adaptation or resilience strategies to exploit opportunities and to recover from the negative effects of climate change. Clearly the asset-portfolios of individuals, households, and communities are a key determinant of their adaptive capacity both to reduce risk, and to cope with and adapt to increased risk levels.

Appendix 4: Conceptual Framework



Appendix 5: Risk Assessment at Site Level

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
Rural Odisha-Markandi (MRK)			MRK	MRK (0/1)	MRK (0/-1)	MRK (0/-1)		MRK
Socio-cultural				11	-6	0	5	
1	Health	Out of pocket health expenditure	No problems mentioned	0	0	0	0	
		Incidence of illness, types of diseases	Low risk	0	0	0	0	
		Distance from the closest health centre	High risk	0	-1	0	-1	Though there is a small nursing home near the village, many people have complained about lack of good medical facilities in the vicinity
2	Education	Skill training	Mason training	1	0	0	1	However not all took up the training
		Quality of education	High Risk: Only primary school, and anganwadis are not very useful	0	-1	0	-1	
		Dropouts rates	High risk (Dropout rates of both men and women are high)	0	-1	0	-1	
		Level of Female Education	High drop outs	0	-1	0	-1	

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
3	Social Safety nets	FORMAL: Knowledge of Entitlements and channels	Fishing Cards	1	0	0	1	Money for building toilets, Bank accounts	
		INFORMAL : Structure and channels	Low risk	1	0	0	1		
4	Networks	Neighbourhood relations	Fairly Close knit under different communities	1	0	0	1	However chosen to live separately in the new site	
		Collective Activities (Social benefits/Economic benefits/Religious benefits)	Low risk (Within communities)	1	0	0	1	Continue to live in proximity	
5	Family Extensions	Family structure	One or multiple households/Joint family	Nuclear families	0	0	0	0	
		Women	Household structure/ Head of family	Mixed	1	0	0	1	Houses in the name of the women
		Older People	Family support structure	Mixed. Stayed alone or with married sons	0	0	0	0	
			Levels of compensations in project		0	0	0	0	
		Children	Support by Anganwadis	High Risk	0	-1	0	-1	Anganwadis don't function well.
		Physically disabled	Access to entitlements	Medium Risk: Physical access is a problem and dependent on others for everything including collecting entitled pension.	0	-1	0	-1	The new houses do not provide any design distinctions for the physically disabled

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
6	Community Structure		Collective assets	Collective ownership	1	0	0	1	13 Temples/ Agriculturists have community owned land
7	Psychological risks	Privacy, Dignity, Safety against crime and conflict	Memory, Manifestation of shock, Insecurity (Stress) [Stratified sampling]	Disaster risk/ shock is high	1	0	0	1	People are confident of the new structures provided
			Safety	Low risk	1	0	0	1	
			Toilets for women - use, location and number	Open defecation	1	0	0	1	
8	Cultural practices		Rituals and festivals	Collective social activities	1	0	0	1	
Physical stock, (flow = access)					22	-8	-1	13	
1	Buildings	Before and after relocation	Type of roof/ type of walls/ plinth	Exposed to risks and damages during cyclones	1	0	0	1	
			Housing typology/form	Single family/ row housing	1	0	0	1	
		Household level – built-up area	Modifications on provided/ modifications allowed	None in the old site	1	0	0	1	People made changes based on requirements: shared walls, more space for nets and boats, etc.
		Household level	Size of the plot and covered area	The old house was slightly bigger, although plot size is bigger in the new allocation.	1	0	0	1	Besides, they continue to own the previous property also

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
2	Public systems	Water	Quality/frequency/service provider	Quality did not seem a problem, but collecting water was mentioned as a challenge	0	0	-1	-1	Pipe water supply with solar pumps, but remains an untreated borewell water source, World Vision Water Purification system in current site.
			Type of supply	Hamd pump/Public tap/Well	1	0	0	1	
		Sanitation	Type of disposal (before and after)	Open defecation	1	0	0	1	People mentioned that they plan to use the provided toilets
			Type of toilet/location	Open defecation	1	0	0	1	Individual toilets and baths right next to the house allocation
			Planning priorities and design	None existed	1	0	0	1	Separate toilets and baths
		Solid waste	Collection system/disposal system	No system exists. People dump in the sea	0	-1	0	-1	Dump is left out on the sea
			Reuse (approaches at local level)	No system exists	0	-1	0	-1	
		Electricity	Source/type of usage	People have recent electricity connections	1	0	0	1	
			Reliability / resilience (opportunity/risk)	No electricity in public spaces, also frequent power cuts	0	-1	0	-1	
		Energy	Consumption pattern (positive or negative)	Thermal	0	-1	0	-1	Use of fire wood continues

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Transport	Type of roads	Main road is made of cement, rest is mud	1	0	0	1	Additional funds are meant to be provided to the VDCs to build roads, etc.
		Availability of public transportation	Not much exists	0	-1	0	-1	
	Communication/ICT	Early warning systems	Announcements are done, people have mobile phones to receive messages (although there have been instances of miscommunication)	0	-1	0	-1	
	Social infrastructure	Health/education/information centre/temple	Anganwadi, temples, community centre, well	1	0	0	1	People can continue to use the old social infrastructure
	Critical infrastructure	Resilience	Cyclone shelter	1	0	0	1	One is being built
3	O & M	Community/individual/government/private	Community/NGOs	1	0	0	1	
		Reliability	Resources available (ex: staff)	Community/NGOs	1	0	0	1
4	Land	Productivity/tenure/inundation/expenditure	High productivity/non alienable	1	0	0	1	
		Site location/quality of soil/hazard exposure/distance from previous site	High risk (exposed to cyclones)	0	-1	0	-1	Risk to storm surge still continues

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
5	Public spaces	Types of public spaces	Temples	1	0	0	1	Provided by World Vision - access to the same continues	
		Available/ usage	Highly dependent	1	0	0	1		
		Play area availability and access		1	0	0	1		
		Proximity	Very close	1	0	0	1		
6	Trees and natural capital	Kind of ownership/type	Community	1	0	0	1		
		Utility - (ecological balance/livelihood/quality of life)		1	0	0	1		
7	No of assets	Productive/life line assets	Lack of canal, takes time and resources to to build one temporarily each year. Also does not allow them to invest in bigger boats	0	-1	0	-1		
		Kind of ownership/usage	community owned land	1	0	0	1		
Economic					11	-7	0	4	
1	Livelihoods - nature and com-position	Type	Formal/informal	Informal and lack of sufficient social safety net access. Also hazardous conditions of work	0	-1	0	-1	
		Self-employed/daily wage labour	Daily wage and dependent on large boat/land owners	0	-1	0	-1		

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Household level	Diversity of income	Fishing, agriculture, Pisciculture all but one source of income per family	0.5	-0.5	0	0	mason training was limited to 50 people per village and not sufficient for this very large village
		Sole/multiple earners	More than one person on an average are earners	1	0	0	1	
		Gender perspective	Equal	1	0	0	1	Titles in the name of women
		Labour	Skill and education status	Traditional skills+mason training	0.5	-0.5	0	0
	Pattern of consumption	Type and quantum of savings	Existing bank accounts used for fishing transactions while travelling etc.	1	0	0	1	Additional accounts are opened for beneficiaries who sis not have one
2	Marketable and non-marketable assets	Usage and type (Ex: refrigerator, car)	People have non-marketable assets, but only a few have marketable assets (land, boats, etc.)	1	0	0	1	There's been no change in terms of access to marketable assets.
		Economic asset ownership patterns	Few individuals own the land/boats on which the rest work	0	-1	0	-1	Dependence on some individuals continues to remain high
		House ownership	Individual	0	-1	0	-1	Land ownership is non-alienable and not freely marketable

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
3	Access to financial services	Type (formal, informal)	Both formal and informal banking systems, but no insurance	1	0	0	1	New bank accounts could help save more
		How they access	Social networks	1	0	0	1	Can continue
4	Financial/capital investments	Mutual funds/bonds/savings - all channels but liquids	Not saving much at the moment	0	-1	0	-1	
		House/land/other assets		1	0	0	1	
5	Risk transfer and sharing	Formal and informal (SHG, local chit funds, other channels)	Both	1	0	0	1	Social dependence, but has not changed or made worse
		Insurance - micro/business	No	0	-1	0	-1	
		Insurance - life (health, accident)/non-life (endowment, child, building, crop, vehicle, fire, catastrophic, weather)	No non-life insurance	1	0	0	1	They are likely to get multi-hazard non-life insurance
		Cooperative/individual arrangements	Yes	1	0	0	1	Existing continue to work
Environmental				3	-2	-1	0	
1	Quality and quantity of water	Scenario - before and after	Quality isn't a problem but quantity seems to be a problem	1	0	0	1	

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
		State of environment	Primary and secondary impacts on individuals	Contamination of sea by people	0	-1	0	-1	
		source	Surface water/ground water	Ground water	0	-1	0	-1	Saline water underground - long term sustainability could be a concern
2	Quality of air		Secondary level impacts on individuals (ex: health, respiratory problems)	No mention of such issues	0	0	0	0	
3	Green cover		Type of vegetation	Diverse vegetation	1	0	0	1	
			Proportion of green cover	Less cover	0	0	-1	-1	Had to clear some forested land to build housing
4	Biodiversity		Secondary level impacts on individuals (narrative)	None	1	0	0	1	
Institutional/Governance and regulatory (I/G/R)					1	-1	0	0	
1			Types of existing institutions (Formal/informal)	Formal (village level committees)	1	0	0	1	Reinstated the VDC
2		Risk created by (I/G/R)	National/ state/district level		0	0	0	0	
			Differential impacts on other groups (community based, old aged/marginalised populations)	High (community based)	0	-1	0	-1	Lack of sufficient entitlements for the marginalised (old and disabled in particular) continues

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
3	Risk to (I/G/R)	Decision leading to risks		0	0	0	0	
Quality of Life and Political agency				2	-4	0	-2	
		Access to public transportation	High risk	0	-1	0	-1	
		Access to primary, secondary and tertiary education	High Risk (only primary education is available)	0	-1	0	-1	
		Access to public spaces	Good	1	0	0	1	
		Access to public distribution system/any other sources		1	0	0	1	
		Access to adequate health facilities	High risk (only a nursing home in the vicinity)	0	-1	0	-1	
		Access to entitlements		0	-1	0	-1	
				50	-28	-2	20	

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
Devi Nagar (DLR)				DLR	DLR (Relocated) (0/1)	DLR (Relocated) (-1/0)	DLR (Relocated) (-1/0)		DLR
Socio-cultural					8.5	-4.5	-10	-6	
1	Health		Out of pocket health expenditure	Low risk	1	0	0	1	No new hazards created
			Incidence of illness, types of diseases	Low risk	1	0	0	1	
			Distance from the closest health centre	High risk	1	0	0	1	Have come closer to Chatrapur
2	Education		Skill training	Traditional forms of skill training	0	-1	0	-1	
			Quality of education	Low risk (not stated)	1	0	0	1	Has not changed
			Dropouts rates	High dropout rates in women	0	-1	0	-1	Outcomes of risk creation are not known yet
			Level of Female Education	Low level of female literacy	0	-1	0	-1	
3	Social Safety nets		FORMAL : Knowledge of Entitlements and channels	Moderate access	1	0	0	1	Provision of money for building toilets, Bank accounts
			INFORMAL : Structure and channels	Free medical facilities by private providers, Social dependency was high	0	0	-1	-1	
4	Networks		Neighbourhood relations	Close knit	0	0	-1	-1	
			Collective Activities (Social benefits/Economic benefits/Religious benefits)	Collective ownership	0	0	-1	-1	

		Potential Assets	Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
5	Family Extensions	Family structure	One or multiple households/Joint family	Nuclear families	0	0	-1	-1	Families have clearly broken and now staying in two separate locations. Has increased vulnerability particularly for the women, old and children
		Women	Household structure/ Head of family	Mixed	1	0	0	1	Potential gains from land title being in the name of the woman
		Older People	Family support structure	Older people were living separately	0	0	-1	-1	People used to live the same village
		Children	Support by Anganwadis	no problems mentioned with respect to anganwadis	0	0	-1	-1	No new anganwadis created and no access to the previous ones
		Physically disabled	Access to entitlements		1	0	0	1	There were instances where families got priority for housing allocation where there were physically/mentally disabled people. One such family moved on priority as this new location brought her closer to her workplace.
			Levels of compensations in project		1	0	0	1	Same as above
6	Community Structure	Collective assets	Collective ownership	0	0	-1	-1	Distance to land has increased	

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
7	Psychological risks	Privacy, Dignity, Safety against crime and conflict	Memory, Manifestation of shock, Insecurity (Stress) [Stratified sampling]		0	0	-1	-1	Insecurity of theft and safety has clearly increased
			Safety	Low risk	0	0	-1	-1	Not safe for travel to the old location
			Toilets for women - use, location and number	Medium risk (Open defecation but accessible)	0.5	-0.5	0	0	Though toilets have been built few people still don't use it because of the design.
			Transit housing quality and standards, Project considerations for cultural sensitivities	Houses broke after the cyclones	0	-1	0	-1	People continue to stay in broken housing until new houses were provided. Do not seem to have availed the rental support provision.
8	Cultural practices		Rituals and festivals	Collective social activities	0	0	-1	-1	No ponds/wells/ community centre/temple
Physical stock, (flow = access)					13	-8	-10	-5	
1	Buildings	Before and after relocation	Type of roof/ type of walls/ plinth	Exposed to risks and damages during cyclones	1	0	0	1	
			Housing typology/form	Single family/ row housing	1	0	0	1	
		Household level - built-up area	Modifications on provided/ modifications allowed	None	1	0	0	1	Modifications/ extensions can be made
		Household level	Size of the plot and covered area	Not sufficient	1	0	0	1	Bigger plot size

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
2	Public systems	Water	Quality/frequency/service provider	No perceived problems	0	0	-1	-1	Colour of water
			Type of supply	Mixed	1	0	0	1	Pipe water supply with solar pumps, but remains a untreated borewell water source
		Sanitation	Type of disposal (before and after)	Open defecation	1	0	0	1	Pit latrine
			Type of toilet/location	Open defecation	1	0	0	1	Separate toilets and bathroom facilities per household
		Solid waste	Planning priorities and design	None exists	1	0	0	1	Separate toilet units
			Collection system/disposal system	None exists	0	-1	0	-1	No solid waste system in place
		Electricity	Reuse (approaches at local level)	Not much problems expressed	0	-1	0	-1	No plans for solid waste disposal
			Source/type of usage	Not sufficient in public spaces	1	0	0	1	
		Energy	Reliability / resilience (opportunity/risk)	Frequent power cuts	0	-1	0	-1	
			Consumption pattern (positive or negative)	Thermal	0	-1	0	-1	Still use fire-wood and they cook outside and not in the kitchen
		Transport	Type of roads	Mud roads	1	0	0	1	
			Availability of public transportation	None	0	-1	0	-1	

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Communication/ICT	Early warning systems	Announcements are done, people have mobile phones to receive messages (although there have been instances of miscommunication)	0	-1	0	-1	
	Social infrastructure	Health/education/information centre/temple	Primary education centre, temple, public pond, community centre and well	0	-1	0	-1	
	Critical infrastructure	Resilience	Community space but insufficient physical characteristics, lack of access to cyclone shelters	0	-1	0	-1	
3	O & M	Community/individual/government/private	Community level	1	0	0	1	Might get funds for O&M & creation of VDC
		Reliability	Resources available (ex: staff)	Community level	1	0	0	1
4	Land	Productivity/tenure/inundation/expenditure	High productivity/non alienable/low/low	1	0	0	1	Tenure - extra piece of land for housing
		Site location/quality of soil/hazard exposure/distance from previous site	Safe location w.r.t surge and floods	1	0	0		Distance to the old site

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)	Notes	
5	Public spaces	Types of public spaces	Community centre + temple + pond+ well	0	0	-1	-1		
		Play area availability and access	Plenty of open space to play in	0	0	-1	-1	Close to highway now - not safe for children to stay alone	
		Available/ usage	Highly dependent	0	0	-1	-1		
		Proximity	Very close	0	0	-1	-1		
6	Trees and natural capital	Kind of ownership/type	Community	0	0	-1	-1	No community land provided	
		Utility - (ecological balance/livelihood/quality of life)	High	0	0	-1	-1	No space	
7	No of assets	Productive/life line assets	Access to land - did not need cycles before to get to the land	0	0	-1	-1	Now they need additional assets to continue their productivity (cycles, etc.)	
		Kind of ownership/usage	community owned land	0	0	-1	-1	No community land	
Economic					7	-7	-5	-5	
1	Livelihoods - nature and composition	Type	Formal/informal	Informal	0	-1	0	-1	No support with entitlements, etc.
			Self-employed/daily wage labour	Mixed (work in TATA and in their own farms)	0	0	-1	-1	
			Diversity of income	Low (farm + TATA)	0	-1	0	-1	
		Household level	Sole/multiple earners	Multiple earners	0	0	-1	-1	
			Gender perspective	equal	0	0	-1	-1	
		Labour	Skill and education status	traditional skills	0	-1	0	-1	

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Pattern of consumption	Type and quantum of savings		1	0	0	1	All have bank accounts now
2	Marketable and non-marketable assets	Usage and type (Ex: refrigerator, car)	Most people only own non-marketable assets and continue to own them	1	0	0	1	
		Economic asset ownership patterns	Community owned	0	-1	0	-1	Access has reduced
		House ownership	Individual	1	0	0	1	Although the patta they have received is non-alienable
3	Access to financial services	Type (formal, informal)	Informal	1	0	0	1	Bank accounts
		How they access	Social networks	1	0	0	1	Continue to have their relations with the previous neighbours
4	Financial/capital investments	Mutual funds/bonds/savings - all channels but liquids	Not much savings yet.	0	-1	0	-1	Continue to not save in safe ways
		House/land/other assets		1	0	0	1	
5	Risk transfer and sharing	Formal and informal (SHG, local chit funds, other channels)	Informal	0	0	-1	-1	Loss of access to old networks
		Insurance - micro/business	NO	0	-1	0	-1	

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Insurance - life (health, accident)/ non-life (endowment, child, building, crop, vehicle, fire, catastrophic, weather)	Some	0	-1	0	-1	
			Insurance - asset/output based	No	1	0	0	1	Multi hazard insurance
			Cooperative/ individual arrangements	Yes	0	0	-1	-1	Loss of access to old networks
Environmental					2	-2	-3	-3	
1	Quality and quantity of water		Scenario - before and after	Perceived to be ok	0	0	-1	-1	
		State of environment	Primary and secondary impacts on individuals	High Risk (contamination from IRE)	0	-1	0	-1	contamination from IRE
		source	Surface water/ground water	Ground Water	1	0	0	1	Ground water pumps are provided, and the water in the new site does not seem to be saline. Although long term sustainability of this source of water could be questionable.
2	Quality of air		Secondary level impacts on individuals (ex: health, respiratory problems)	No mention of such issues	1	0	0	1	People have mentioned so.
3	Green cover		Type of vegetation	Diverse vegetation	0	0	-1	-1	No vegetation
			Proportion of green cover	High cover	0	0	-1	-1	No trees

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
4	Biodiversity		Secondary level impacts on individuals (narrative)	High Risk (monkey menace+ snakes)	0	-1	0	-1	
Institutional/Governance and regulatory (I/G/R)				1	-1	0	0		
1			Types of existing institutions (Formal/informal)	Formal (village level committees)	1	0	0	1	VDC
2		Risk created by (I/G/R)	National/ state/district level	None	0	0	0	0	
			Differential impacts on other groups (community based, old aged/marginalised populations)	High (caste based divisions)	0	-1	0	-1	Mixing upper and lower caste in one settlement
3		Risk to (I/G/R)	Decision leading to risks	None	0	0	0	0	
Quality of Life and Political agency				0.5	-2.5	-2	-4		
			Access to public transportation	High risk	0	-1	0	-1	
			Access to primary, secondary and tertiary education	High Risk (only primary education is available)	0	-1	0	-1	
			Access to public spaces	Good	0	0	-1	-1	No public spaces
			Access to public distribution system/any other sources	Not enough information on this				0	

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Access to adequate health facilities	Low risk (TATA)	0	0	-1	-1	Not sure if TATA will continue to provide services for people who have moved to the new location
			Access to entitlements	Not too many existed before - apart from pensions for old and widows	0.5	-0.5	0	0	With prioritising housing allocation to the widows and disabled it would improve, but the old are still excluded from the benefits
					32	-25	-30	-23	

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
Uppalaputti – Basanaputti Relocation Site (UPB)			UPB	UPB (Relocated) (0/1)	UPB (Relocated) (-1/0)	UPB (Relocated) (-1/0)		UPB
Socio-cultural				6	-3	-12	-9	
1	Health	Out of pocket health expenditure	Medium Risk (for small problems they go to gopalpur and 13/25 said they face health problems in the current site)	1	0	0	1	Distance to the hospital increased by 5 km and dependent on public transport
		Incidence of illness, types of diseases	Medium Risk (professional hazards with fishing)	0	-1	0	-1	No new risks created
		Distance from the closest health centre	High Risk - Very difficult to access - especially in emergencies	0	0	-1	-1	Distance to the hospital increased by 5 km
2	Education	Skill training	Traditional skills (fresh water + sea water fishing, agriculture)	0	-1	0	-1	Were not given mason training in this village - most women who work as daily wage labourers would have benefitted.
		Quality of education	Low risk (said it was improved compared to earlier)	1	0	0	1	Will have to travel to the old village for education
		Dropouts rates	High dropout rates - both men and women (55 out of 113 family members dropped out or never attended school)	0	0	-1	-1	distance to the school may lead to more drop outs - especially in women

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
		Level of Female Education	26/56 women dropped out of school or never attended	0	0	-1	-1	distance to the school may lead to more drop outs - especially in women
3	Social Safety nets	FORMAL : Knowledge of Entitlements and channels	9/25 have opened bank accounts for either work or savings + Maternity benefits, Widow and old age pensions and BPL cards	1	0	0	1	All of them have now bank accounts, most of them have knowledge of Zero balance accounts + receiving money for toilet construction + though some of them fear that they will lose BPL card because of pucca house
		INFORMAL : Structure and channels	High dependency for livelihood and loans - were dependent on relatives/ neighbours/ friends/other institutions for help during cyclones	0	0	-1	-1	Families will lose their existing networks when relocated
4	Networks	Neighbourhood relations	High among the same caste groups	0	0	-1	-1	Relocation from various villages/ cast group to one village will lead to conflict in the new site
		Collective Activities (Social benefits/ Economic benefits/Religious benefits)	Especially in the fishing community - have groups who go for fishing together	0	0	-1	-1	Some of them being moved to the new location

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Oportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
5	Family Extensions	Family structure	Nuclear families (Avg - 5.1) but stay close to extended family and relatives	0	0	-1	-1	In case of bigger/joint families older family member continue to stay in the old site	
		Women	Household structure/ Head of family	Male headed HH (15 M, 5 F, 5 Family)	1	0	0	1	New title in both male and female names. Allocation of house name may not indicate who takes the major decisions in the family, but the status quo can also remain the same in this situation.
		Older People	Family support structure	Older people were living separately - but still close to the other family members	0	0	-1	-1	new houses will be occupied by younger family members/newly-wed and will be moved out of the village
		Children	Support by Anganwadis	Low (Primary and secondary with in the village) - no information on anganwadi	0	0	-1	-1	No school in the relocation site - kids will have to travel 5 km to access school. New site is located next to IRE and on either side of state highway which will be unsafe for kids because of truck traffic
		Physically disabled	Access to entitlements	No information	0	0	0	0	
Levels of compensations in project	No information		0	0	0	0			

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
6	Community Structure	Collective assets	A few of the respondents said that they share fishing nets and boats	0	0	-1	-1	will be difficult to access from the new site
7	Psychological risks Privacy, Dignity, Safety against crime and conflict	Memory, Manifestation of shock, Insecurity (Stress) [Stratified sampling]	Low risk - established networks (women responded that don't feel unsafe to walk from highway to village)	1	0	0	1	Women expressed concern about safety in the relocation site
		Safety	Low risk	0	0	-1	-1	Women expressed concern about safety in the relocation site
		Toilets for women - use, location and number	Moderate Risk - Open defecation (15/25 said they face issues with toilets)	1	0	0	1	2/25 said that they think sanitation is a problem in the new site
		Transit housing quality and standards, Project considerations for cultural sensitivities	Some living in the repaired houses or living with other families	0	-1	0	-1	No support received for transit or enough damage compensation for repair of the houses - families were living in the damaged houses for more than 2 years now
8	Cultural practices	Rituals and festivals	Collective social activities	0	0	-1	-1	Mixing with other caste groups +Relocating families from many village to one relocation site + no temples etc., in the relocation site

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
Physical				14	-5.5	-11.5	-3		
1	Buildings	Before and after relocation	Type of roof/ type of walls/ plinth	Temporary materials - Exposed to risks and damages during cyclones	1	0	0	1	RCC structures
			Housing typology/form	Row housing with little or no ventilation	1	0	0	1	New house design includes setbacks and windows for ventilation
		Household level - built-up area	Modifications on provided/ modifications allowed	No space	1	0	0	1	Space for extension on ground - structure designed for building up to first floor - families have already invested in stair cases
			Household level	Size of the plot and covered area	Narrow and long sites - completely built	1	0	0	1
2	Public systems	Water	Quality/frequency/service provider	High Risk (complaints of bad quality water and Salty water)	0	-0.5	-0.5	-1	Perceived to be a risk (10/25 said that water will be an issue in the new site - citing IRE is polluting water) + unsustainable source of ground water
			Type of supply	Hand pumps + public water taps + well	1	0	0	1	Pipe water supply with solar pumps
		Sanitation	Type of disposal (before and after)	Open defecation	1	0	0	1	Pit latrine
			Type of toilet/ location	Open defecation	1	0	0	1	Separate toilets and bathroom facilities per household

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
		Planning priorities and design	None exists	1	0	0	1	Separate toilet units from the main houses because of cultural reasons
	Solid waste	Collection system/disposal system	None exists	0	-1	0	-1	No solid waste system in place
		Reuse (approaches at local level)	Not much problems expressed	0	-1	0	-1	No plans for solid waste disposal
	Electricity	Source/type of usage	Metered connections to individual houses	1	0	0	1	Metered connection as part of the project
		Reliability / resilience (opportunity/risk)	Medium Risk (6(Raekatur)/25 responded saying that electricity is a problem and they have frequent power cuts and high bills some-times)	0	-1	0	-1	Installation of new meters might resolve the issue of high power bills. + Integration of solar panels etc., could have reduced power bills and reliance on power cuts
	Energy	Consumption pattern (positive or negative)	Thermal + Gas (10/15 use gas stoves)	0	-1	0	-1	There was an opportunity to introduce better heating systems(solar, etc.) but that could not be done
	Transport	Type of roads	Paved concrete Roads	1	0	0	1	
		Availability of public transportation	Available from the highway near Gopalpur (have to walk 2 kms to reach the highway)	0	-0.5	-0.5	-1	the distance increased by 5 kms more - and women particularly mentioned that they feel unsafe to travel from the new location and send kids to school

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Communication/ICT	Early warning systems	Existing cyclone shelter	0	-0.5	-0.5	-1	No safe shelter nearby
	Social infrastructure	Health/education/information centre/temple	Nearest health centre is Gopalpur (5 kms from the village)/school till 7th standard available in the village/lot of temples	0	0	-1	-1	No school/hospital in the relocation site
	Critical infrastructure	Resilience	A cyclone shelter and school building available	0	0	-1	-1	No cyclone shelter close to the relocation site
3	O & M	Community/individual/government/private	No information	1	0	0	1	Government providing funding for VDCs
		Reliability	Resources available (ex: staff)	No information	1	0	0	1
4	Land	Productivity/tenure/inundation/expenditure	Some families in haripur village depend on agriculture/Families in Raekatturu don't have land pattas while the rest of the two villages have/exposed to surge/low	1	0	0	1	Will be a problem for the fishing communities to operate from the relocation site - no access to the sea from the relocation site + travel to the old village for work is an additional expenditure
		Site location/quality of soil/hazard exposure/distance from previous site	Close to the sea/sandy soil/high exposure to storms and surge/relocation 5 kms from original village	1	0	0	1	Risk to cyclonic winds and surge is avoided in the relocation site but very difficult for livelihoods

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
5	Public spaces	Types of public spaces	Open areas near the coast + boat building space + front verandahs + temple + cyclone shelter	0	0	-1	-1	No designated spaces
		Play area availability and access	Play on the streets and in the school	0	0	-1	-1	Highway with heavy truck traffic passing through the site - no school/ designated play areas
		Available/ usage	Mostly gather in the verandahs during the day eg., for playing cards + use cyclone shelter for weddings gatherings etc.	0	0	-1	-1	No designated spaces
		Proximity	Very close	0	0	-1	-1	No designated spaces
6	Trees and natural capital	Kind of ownership/type	Some own kevada farms (inherited) + community maintained fishing deck near the sea and river	0	0	-1	-1	Very far from the relocation site - have to still use the fishing and agriculture land near the old village
		Utility - (ecological balance/livelihood/quality of life)	High use (sea and river water fishing)	0	0	-1	-1	Very far from the relocation site - have to still use the fishing and agriculture land near the old village
7	No of assets	Productive/life line assets	few own land (inherited) and few fishermen own boats	0	0	-1	-1	Very far from the relocation site - have to still use the fishing and agriculture land near the old village

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
		Kind of ownership/usage	Individually owned (some)	0	0	-1	-1	Very far from the relocation site - have to still use the fishing and agriculture land near the old village	
Economic				4.5	-5.5	-9	-10		
1	Livelihoods - nature and composition	Type	Formal/informal	Informal	0	0	-1	-1	expenses on travel to the old site may be affect livelihoods
			Self-employed/daily wage labour	The fish hatchery generated employment opportunities	0	0	-1	-1	expenses on travel to the old site may be affect livelihoods
			Diversity of income	Low (fishing or daily wage labourer)	0	-1	0	-1	Expenditure on travel will increase -, hence maybe it is a high risk
		Household level	Sole/multiple earners	Multiple earners	0	0	-1	-1	Will be difficult for women to travel for work from the relocation site
			Gender perspective	Males and females work currently	0	0	-1	-1	Will be difficult for women to travel for work from the relocation site
		Labour	Skill and education status	traditional skills	0	0	-1	-1	distance to the school can increase school dropouts - especially in women

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Pattern of consumption	Type and quantum of savings	few had mentioned that they have opened bank accounts before but didn't manage to save	0	-1	0	-1	expenditure on travel will increase after relocation
2	Marketable and non-marketable assets	Usage and type (Ex: refrigerator, car)	some own fishing boats and nets + land	1	0	0	1	no change
		Economic asset ownership patterns	People share boats and fishing nets for work	0	0	-1	-1	Access has reduced
		House ownership	Individual (no ownership of house/land in raekattur)	1	0	0	1	Although the patta they have received is non-alienable
3	Access to financial services	Type (formal, informal)	Informal (few own bank accounts but highly rely on friends/neighbours)	1	0	0	1	Bank accounts for all
		How they access	Social Networks	0	0	-1	-1	May loose access with their existing networks post relocation
4	Financial/capital investments	Mutual funds/bonds/savings - all channels but liquid	Not much savings yet.	0	-1	0	-1	will likely to remain the same or get worse with increase in expenditure and loss of livelihoods
		House/land/other assets		1	0	0	1	New house and patta

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
5	Risk transfer and sharing		Formal and informal (SHG, local chit funds, other channels)	Informal	0	0	-1	-1	Loss of access to old networks
			Insurance - micro/business	NO	0	-1	0	-1	
			Insurance - life (health, accident)/ non-life (endowment, child, building, crop, vehicle, fire, catastrophic, weather)	Some	0.5	-0.5	0	0	Multi hazard insurance
			Insurance - asset/output based	No	0	-1	0	-1	
	Cooperative/ individual arrangements	Yes	0	0	-1	-1	Loss of access to old networks		
Environmental					1.5	-1.5	-4	-4	
1	Quality and quantity of water		Scenario - before and after	Salt water intrusion and polluted wells	0.5	0	-0.5	0	perceived to be a risk by the HHs that water in the new site is contaminated because of IRE
		State of environment	Primary and secondary impacts on individuals	High Risk - contaminated water	0	-0.5	-0.5	-1	contamination from IRE
		source	Surface water/ground water	Sea and river proximity	0	0	-1	-1	
2	Quality of air		Secondary level impacts on individuals (ex: health, respiratory problems)	No mention of such issues	1	0	0	1	No mention of such issues

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
3	Green cover		Type of vegetation	Diverse Vegetation (Kevada + Cashew)	0	0	-1	-1	No vegetation
			Proportion of green cover	Low/Sparse	0	-1	0	-1	No trees
4	Biodiversity		Secondary level impacts on individuals (narrative)	High dependency	0	0	-1	-1	loss of access to the sea + river
Institutional/Governance and regulatory					1	-0.5	-0.5	0	
1			Types of existing institutions (Formal/informal)	Formal (village level committees)	1	0	0	1	VDC
2	Risk created by (I/G/R)		National/ state/district level	None	0	0	0	0	
			Differential impacts on other groups (community based, old aged/marginalised populations)	High (caste based divisions)	0	-0.5	-0.5		Mixing with other caste groups +Relocating families from many village to one relocation site
3	Risk to (I/G/R)		Decision leading to risks	None	0	0	0	0	
Quality of Life and Political agency					0.5	-3	-2.5	-5	
			Access to public transportation	Moderate Risk (Available from the state highway - 3 km from the village)	0	-0.5	-0.5		distance to the highway is increased by 5 km - use to access by walk - now will have to be dependent on private transport
			Access to primary, secondary and tertiary education	High Risk (only primary education is available)	0	0			

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)	Notes
			Access to public spaces	Good	0	0		No public spaces
			Access to public distribution system/any other sources	No PDS centre nearby	0		0	
			Access to adequate health facilities	High risk	0		0	Increased distance -
			Access to entitlements	Maternity benefits + old and widow pensions + Some have BPL	0.5	-0.5	0	0 some think that they will lose BPL if relocated
					27.5	-19	-39.5	-31

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
Sevanagar			SEV	SEV (0/1)	SEV (0/-1)	SEV (0/-1)		SEV	
Socio-cultural				5	-4	-10	-9		
1	Health		Out of pocket health expenditure	No problems mentioned	0	0	-1	-1	Hospital expenses are high
			Incidence of illness, types of diseases	Low risk	0	0	-1	-1	Increase in water and vector borne diseases
			Distance from the closest health centre	High risk	0	0	-1	-1	Distance to the health care has increased.
2	Education		Skill training	High risk	0	-1	0	-1	They never had any form of skill training earlier and even now
			Quality of education	No information	0	0	-1	-1	No schools nearby
			Dropouts rates	High risk (Earlier the school fees were high)	0	-1	0	-1	Post relocation, dropout rates of both men and women are high due to lack of schools in the vicinity
			Level of Female Education	High risk	0	-1	0	-1	
3	Social Safety nets		FORMAL : Knowledge of Entitlements and channels	No problems mentioned	0	0	0	0	
			INFORMAL : Structure and channels	In the old settlement, the social dependency was high.	0	0	-1	-1	Post relocation, people have lost their social networks especially in terms of credits and livelihoods
4	Networks		Neighbourhood relations		0	0	-1	-1	Few people from the old settlement were left behind

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
		Collective Activities (Social benefits/Economic benefits/Religious benefits)		1	0	0	1		
5	Family Extensions	Family structure	Nuclear families	0	0	0	0		
		Women	Household structure/Head of family	Mixed	1	0	0	1	Houses in the name of the women
		Older People	Family support structure	No information	0	0	0	0	
			Levels of compensations in project	None	0	0	-1	-1	
		Children	Support by Anganwadis	None	0	0	-1	-1	
		Physically disabled	Access to entitlements	No	0	-1	0	-1	
6	Community Structure	Collective assets		1	0	0	1	They have temple, church	
7	Psychological risks	Privacy, Dignity, Safety against crime and conflict	Memory, Manifestation of shock, Insecurity (Stress) [Stratified sampling]	Low risk	0	0	-1	-1	Alcoholism, women feel unsafe, many people have still not come out the relocation shock
			Safety	Low-risk	0	0	-1	-1	Theft, unsafe for women
			Toilets for women - use, location and number	High risk	1	0	0	1	Individual toilets at home

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
8	Cultural practices		Rituals and festivals		1	0	0	1	
Physical stock, (flow = access)				14	-9	-7	-2		
1	Buildings	Before and after relocation	Type of roof/ type of walls/ plinth	High risk (kuchha house)	1	0	0	1	
			Housing typology/form	Row housing	0	0	-1	-1	Tenement structure (G+3)
		Household level - built-up area	Modifications on provided/ modifications allowed		1	0	0	1	People modified their houses (added shelves in the kitchen, made wash areas)
		Household level	Size of the plot and covered area		0	0	-1	-1	people have mentioned that they had more space in the old house
2	Public systems	Water	Quality/frequency/service provider	No problems have been mentioned	0	0	-1	-1	Many people have complained about the quality of water, and also water infrastructure being broken. Many people have also died due to poor quality of water
			Type of supply	Hand pump	1	0	0	1	Piped water supply/water tank
		Sanitation	Type of disposal (before and after)	Open defecation	1	0	0	1	Have toilets at home
			Type of toilet/location	Open defecation	1	0	0	1	
			Planning priorities and design	Open defecation	1	0	0	1	No problems mentioned

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Solid waste	Collection system/disposal system	No system exists	0	-1	0	-1	Waste are being dumped within the colony behind the blocks
		Reuse (approaches at local level)	No system exists	0	-1	0	-1	
	Electricity	Source/type of usage	No problems mentioned	1	0	0	1	
		Reliability / resilience (opportunity/risk)	No problems mentioned	1	0	0	1	
	Energy	Consumption pattern (positive or negative)	Thermal	0	-1	0	-1	Use of fire wood continues
	Transport	Type of roads	Mud	1	0	0	1	Cement road
		Availability of public transportation	No problems mentioned	0	0	-1	-1	There is problem with frequency and access
	Communication/ICT	Early warning systems	No system exists	0	-1	0	-1	No system exists
	Social infrastructure	Health/education/information centre/ temple	Old site had access to these infrastructure	0	0	-1	-1	However in the new site, they do not have access to any of the infrastructure other than a temple and church
	Critical infrastructure	Resilience	No cyclone shelters	0	-1	0	-1	None even now
3	O & M	Community/individual/government/private	Community/NGO	1	0	0	1	
		Reliability	Resources available (ex: staff)	Community/NGO	1	0	0	1

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
4	Land		Productivity/tenure/inundation/expenditure	Non alienable	1	0	0	1	
			Site location/quality of soil/hazard exposure/distance from previous site	High risk (exposed to floods)	0	-1	0	-1	
5	Public spaces		Types of public spaces	No information	0	-1	0	-1	Church and temple
			Available/ usage		0	0	0	0	
			Play area availability and access		0	-1	0	-1	
			Proximity		0	-1	0	-1	
6	Trees and natural capital		Kind of ownership/type		1	0	0	1	
			Utility - (ecological balance/livelihood/quality of life)		0	0	-1	-1	
7	No of assets		Productive/life line assets	Few people have their own autos	1	0	0	1	
			Kind of ownership/usage		0	0	-1	-1	Not using like before due to relocation
Economic					4	-11	-3	-10	
1	Livelihoods - nature and composition	Type	Formal/informal	Informal and lack of sufficient social safety net access	0	-1	0	-1	
			Self-employed/daily wage labour	Daily wage/self employed	0	-1	0	-1	
			Diversity of income	Diverse income	0	-1	0	-1	

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Household level	Sole/multiple earners	Sole	0	0	-1	-1	Post relocation, many women have started working as their husbands spend the money on alcohol
		Gender perspective	Equal	1	0	0	1	Titles in the name of women
	Labour	Skill and education status	Traditional risk	0	-1	0	-1	
		Pattern of consumption	Type and quantum of savings	No bank accounts earlier	1	0	0	1
2	Marketable and non-marketable assets	Usage and type (Ex: refrigerator, car)	Not many people have non-marketable assets	0	-1	0	-1	There's been no change in terms of access to marketable assets.
		Economic asset ownership patterns		0	-1	0	-1	
		House ownership	None	1	0	0	1	and ownership is non-alienable and not freely marketable
3	Access to financial services	Type (formal, informal)	Earlier they had no bank accounts	1	0	0	1	Now they have bank accounts
		How they access	Social networks	0	0	-1	-1	Relocation has broken their networks
4	Financial/capital investments	Mutual funds/bonds/savings - all channels but liquids		0	0	-1	-1	Not saving now
		House/land/other assets		0	-1	0	-1	

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
5	Risk transfer and sharing		Formal and informal (SHG, local chit funds, other channels)		0	-1	0	-1		
			Insurance - micro/business		0	-1	0	-1		
			Insurance - life (health, accident)/ non-life (endowment, child, building, crop, vehicle, fire, catastrophic, weather)		0	-1	0	-1		
			Cooperative/ individual arrangements		0	-1	0	-1		
Environmental					1	-2	-4	-5		
1	Quality and quantity of water		Scenario - before and after	No problems were mentioned	0	0	-1	-1	People have complained about the poor quality of water	
			State of environment	Primary and secondary impacts on individuals	No problems were mentioned	0	0	-1	-1	People dump garbage near their houses which eventually affects the environment
			source	Surface water/ground water	Ground water	1	0	0	1	Ground water. Bore well
2	Quality of air		Secondary level impacts on individuals (ex: health, respiratory problems)		0	0	-1	-1	The site stinks due to improper garbage disposal and broken sewerage	
3	Green cover		Type of vegetation		0	-1	0	-1		
			Proportion of green cover	Less cover	0	-1	0	-1		

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
4	Biodiversity	Secondary level impacts on individuals (narrative)	None	0	0	-1	-1	Dogs and pigs
Institutional/Governance and regulatory (I/G/R)				1		0	0	
1		Types of existing institutions (Formal/informal)	Community level committees	1	0	0	1	
2	Risk created by (I/G/R)	National/state/district level		0	0	0	0	
		Differential impacts on other groups (community based, old aged/marginalised populations)	High (community based)	0	-1	0	-1	Lack of sufficient entitlements for the marginalised (old and disabled in particular) continues
3	Risk to (I/G/R)	Decision leading to risks		0	0	0	0	
Quality of Life and Political agency				0	0	-6	-6	
		Access to public transportation		0	0	-1	-1	High risk
		Access to primary, secondary and tertiary education		0	0	-1	-1	High risk (no schools/anganwadisin the vicinity)
		Access to public spaces		0	0	-1	-1	High risk (only a temple and church exists)
		Access to public distribution system/any other sources		0	0	-1	-1	High risk
		Access to adequate health facilities		0	0	-1	-1	High risk (no hospitals in the vicinity)

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Access to entitlements		0	0	-1	-1	High risk
					25	-27	-30	-32	

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Oportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
Paradesipalem (PAP)			PAP	PAP (0/1)	PAP (0/-1)	PAP (0/-1)		PAP
Socio-cultural				3	-5	-8	-10	
1	Health	Out of pocket health expenditure	High risk	0	0	-1	-1	No government hospital close by. They need to travel 5 km even to access a private hospital. Many people mentioned that they need to spend on travel and hospital expenses are little high
		Incidence of illness, types of diseases	Medium risk	0	-1	0	-1	11 out of 23 samples complained about regular cold and fever. Rest of them mentioned about infections, vector & water borne diseases
		Move to working in hazardous conditions	None	0	0	0	0	
		Distance from the closest health centre	Low risk	0	0	-1	-1	Many people complained about access, even during emergency they would either walk or take private transport (1-5 km)
2	Education	Skill training	Mason training	0	-1	0	-1	State could have provided skill training as part of in-situ project development
		Quality of education	No problems mentioned	0	0	0	0	

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Learning ecosystems		0	0	0	0	
			Dropouts rates	Medium risk	0	0	-1	-1	people mentioned about dropouts after moving to new site. Due to increased travel time and no proper transportation facility. It would get late by the time children reach their home (from the city which is more than 25 km). No street lights along the approach road - feel unsafe
			Level of Female Education	High drop outs	0	-1	0	-1	
3	Social Safety nets		FORMAL : Knowledge of Entitlements and channels	Low risk (Within communities)	0.5	-0.5	0	0	Women and men are very active through groups and they know how to access
			INFORMAL : Structure and channels	low risk	0	0	-1	-1	Lost their networks
4	Networks		Neighbourhood relations	None of them mentioned about their bonding with their neighbours	1	0	0	1	livelihood and women groups. It is Close knit community

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes		
		Collective Activities (Social benefits/Economic benefits/Religious benefits)	Low risk (Within communities)	0.5	-0.5	0	0	They solve their community level problems collectively. Women are quite active ex: they do collective representations (most of them mention about similar problems at community level)		
		Stories of reliance/Dependence		0	0	0	0			
5	Family Extensions	Family structure	One or multiple households/Joint family	Joint families	0	0	-1	-1	Old aged people or parents started living separately - size of the new house	
		Women	Household structure/Head of family	No much information	0	0	0	0	Women mostly active in managing household expenditure	
		Older People	Family support structure	Started moving out		0	0	-1	-1	together before not after
			Levels of compensations in project			0	0	0	0	
		Children	Support by Anganwadis	No much information		0	0	0	0	
		Physically disabled	Access to entitlements	No much information		0	0	0	0	No samples
			Levels of compensations in project			0	0	0	0	

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
6	Community Structure	Collective assets	No problems mentioned	0	-1	0	-1	sewerage treatment plant. They don't have access to community hall, play area, temple etc., - as they used to have access within proximity	
7	Psychological risks	Privacy, Dignity, Safety against crime and conflict	Memory, Manifestation of shock, Insecurity (Stress) [Stratified sampling]	No problems mentioned	0	0	0	0	most of them used to live in pucca house for rent
			Safety	High risk	0	0	-1	-1	no street lights
			Space creation	Medium risk	0	0	-1	-1	Space
			Number of incidences and their dimensions	No problems mentioned	0	0	0	0	
			Toilets for women - use, location and number	Low risk	1	0	0	1	have access to toilets at home
		Transit housing quality and standards, Project considerations for cultural sensitivities	No problems mentioned	0	0	0	0		
8	Cultural practices	Rituals and festivals	No problems mentioned	0	0	0	0		

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)	Notes	
Physical stock, (flow = access)					12.5	-11	-8.5	-7	
1	Buildings	Before and after relocation	Type of roof/ type of walls/ plinth	low risk- only a few people mentioned about - Exposed to risks and damages during cyclones	1	0	0	1	risk avoided - frequent roof and wall damages
			Housing typology/form	row housing	0	0	-1	-1	old people can't climb stairs
		Household level - built-up area	Modifications on provided/ modifications allowed	No much information	1	0	0	1	. Yes, few people made
			Household level	Size of the plot and covered area	No much information	0.5	-0.5	0	0
2	Public systems	Water	Quality/frequency/service provider	Hand pump - high risk	1	0	0	1	many people complained about access. Despite having household level water connections, most of them use hand pump to collect drinking water (water colour)
			Type of supply	Hand pump/ Public tap	1	0	0	1	HH connections
			Sources and usage - drinking and non-drinking	Ground water/ Hand pump	0	-1	0	-1	Ground water
			Type of storage	No problems mentioned	0	-0.5	0.5	0	No enough space for storage
		Sanitation	Type of disposal (before and after)	No problems mentioned	1	0	0	1	have access to toilets at home
			Type of toilet/ location	No problems mentioned	1	0	0	1	at home

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
		Planning priorities and design	No problems mentioned	0	0	0	0	No problems mentioned
	Solid waste	Collection system/disposal system	No system exists. High risk	0	-1	0	-1	State government would have created a space for dumping waste
		Reuse (approaches at local level)	No system exists	0	-1	0	-1	
	Electricity	Source/type of usage	No problems mentioned	1	0	0	1	
		Reliability / resilience (opportunity/risk)	No problems mentioned	0	0	-1	-1	No electricity in public spaces- Street lights
	Energy	Consumption pattern (positive or negative)	No problems mentioned	1	0	0	1	have gas connections - through government scheme
	Transport	Type of roads	Main road is made of cement, rest is mud	1	0	0	1	
		Availability of public transportation	Low risk	0	0	-1	-1	High risk - no proper access to public transportation
	Communication/ ICT	Early warning systems	Announcements are done	0	-1	0	-1	No arrangements are made
	Social infrastructure	Health/education/information centre/ temple	Low risk - they have access to all these within vicinity	0	0	-1	-1	No access
Critical infrastructure	Resilience	They don't have anything as such	0	-1	0	-1	Nothing is provided yet	
3	O & M	Community/individual/ government/ private	No information	1	0	0	1	NGO is involved with community people

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Oportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Reliability	Resources available (ex: staff)	No information	0	-1	0	-1	No person is appointed
	Community level	Issues if any/ways of resolution	No information	0	-1	0	-1	Collective efforts are being made by community people
	Community level	Awareness about channels (ex: approaching officials)	No information	1	0	0	1	Collective efforts are being made by community people
4	Land	Productivity/tenure/inundation/expenditure	They used to stay for rent	0	-1	0	-1	High productivity/non alienable
		Site location/quality of soil/hazard exposure/distance from previous site	High risk	0	0	-1	-1	Far from city
5	Public spaces	Types of public spaces	Low risk- at least they used have access	0	0	-1	-1	Need to travel more than 10 km - nothing is available within vicinity
		Available/ usage	No information	0	0	0	0	
		Play area availability and access	No information	0	-1	0	-1	Don't have any - high risk
		Proximity	low risk	0	0	-1	-1	very far – at least they need to travel for more than 5 km
6	Trees and natural capital	Kind of ownership/type	No information	1	0	0	1	people use outside space for growing vegetables
		Utility - (ecological balance/livelihood/quality of life)	No information	0	0	-1	-1	Un-cleared bushes - threat of attack by snakes

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
7	No of assets	Productive/life line assets	Autos, watch repair tools, cooking equipment	0	-1	0	-1	Most of use their houses to run shops - grocery, breakfast. Most of them rely on the asset they have it from earlier	
		Kind of ownership/usage	Individual	0	0	-1	-1	Post relocation - most of them don't use that quite often - they go to work alternate days before it is not like this	
8	Food	Staples/kind of food	No problems mentioned					0	
		Consumption pattern (quantity and expenditure)	No problems mentioned					0	Expenditure increased after relocation
		Availability	No problems mentioned					0	
Economic					4	-10.5	-4.5	-11	
1	Livelihoods - nature and composition	Type	Formal/informal	Informal	0	-1	0	-1	very diverse income activities
			Self-employed/daily wage labour	Daily wage and self - employed	0	-1	0	-1	Lost their networks
			Diversity of income	Yes, very diversified	0	-1	0	-1	May not support each other
		Household level	Sole/multiple earners	More than one person on an average are earners	0	0	-1	-1	women stopped working - lost their alternate source of income
			Gender perspective	Low risk	0	0	-1	-1	most of the women stopped working - as they relocated very far - increase in travel expenditure- lost their networks

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Labour	Skill and education status	Not enough information	0	-1	0	-1	Could have been trained
	Pattern of consumption	Type and quantum of savings	No savings	0	-1	0	-1	Though they have bank accounts – won't save much
2	Marketable and non-marketable assets	Usage and type (Ex: refrigerator, car)	No information	0.5	-0.5	0	0	No change in terms of access to marketable assets. They could invested in marketable assets
		Economic asset ownership patterns	No information	0.5	-0.5	0	0	No change in terms of access to economic assets. They could invested
		House ownership	Individual	0	-1	0	-1	Land ownership is non-alienable and not freely marketable
3	Access to financial services	Type (formal, informal)	Both formal and informal banking systems, but no insurance	1	0	0	1	New bank accounts could help save more
		How they access	Social networks	1	0	0	1	Can continue
4	Financial/capital investments	Mutual funds/bonds/savings - all channels but liquids	Not saving much	0	-0.5	0.5	0	Earlier they used to save some - expenditure increased
		House/land/other assets	medium risk	0	-1	0	-1	Livelihood
5	Risk transfer and sharing	Formal and informal (SHG, local chit funds, other channels)	Both	1	0	-1	0	women save through SHG's and chits - most of them lost their networks

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Insurance - micro/business	No	0	0	-1	-1	Lost their networks
			Insurance - life (health, accident)/ non-life (endowment, child, building, crop, vehicle, fire, catastrophic, weather)	No	0	-1	0	-1	
			Insurance - asset/output based	No	0	-1	0	-1	
			Cooperative/individual arrangements	used to have access to informal networks	0	0	-1	-1	No access to networks
Environmental					1.5	-1.5	-1	-1	
1	Quality and quantity of water		Scenario - before and after	No mention of such issues	0	0	-1	-1	Quality - high risk
		State of environment	Primary and secondary impacts on individuals	No mention of such issues	0	0	0	0	
		source	Surface water/ground water	No mention of such issues	0.5	-0.5	0	0	Ground water
2	Quality of air		Secondary level impacts on individuals (ex: health, respiratory problems)	No mention of such issues	0.5	-0.5	0	0	People mentioned about good environment and no breathing problems
3	Green cover		Type of vegetation	Diverse vegetation	0	0	0	0	
			Proportion of green cover	Good cover	0.5	-0.5	0	0	They want to clear the vegetation around the site - threat from snakes

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
4	Biodiversity	Secondary level impacts on individuals (narrative)	None	0	0	0	0	
Institutional/Governance and regulatory (I/G/R)				0.5	-1.5	0	-1	
1		Types of existing institutions (Formal/informal)	Formal and informal	0.5	-0.5	0	0	
		Norms and governance systems (informal institutions/reasons for creating norms)		0	0	0	0	Community level committee is responsible to make representations
2	Risk created by (I/G/R)	National/state/district level		0	0	0	0	
		Differential impacts on other groups (community based, old aged/marginalised populations)	High community based	0	-1	0	-1	Lack of sufficient entitlements for old
3	Risk to (I/G/R)	Decision leading to risks		0	0	0	0	
Quality of Life and Political agency				0.5	-3.5	-2	-5	
		Access to public transportation		0	0	-1	-1	High risk
		Access to primary, secondary and tertiary education		0	0	-1	-1	High Risk
		Access to public spaces		0	-1	0	-1	High risk
		Access to public distribution system/any other sources		0	-1	0	-1	

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Access to adequate health facilities		0	-1	0	-1	High risk
			Access to entitlements		0.5	-0.5	0	0	Medium risk
					22	-33	-24	-35	

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
Sonia Gandhi			SGN	SGN (0/1)	SGN (-1/0)	SGN (-1/0)		SGN
Socio-cultural				11	-5	-5	1	
1	Health	Out of pocket health expenditure	No problems mentioned	1	0	0	1	Still accessing the same hospitals and no new risks created
		Incidence of illness, types of diseases	Moderate Risk (regular cold and fever, water and vector borne diseases)	0	-1	0	-1	no change of water sources
		Distance from the closest health centre	High Risk (7/11 respondents said the hospital is more than 1 km from their location)	0	-1	0	-1	Many people complained about access, even during emergency they would either walk or take private transport (1-5 km)
2	Education	Skill training	traditional skills	0	-1	0	-1	No training was provided for beneficiaries during construction
		Quality of education	No information	1	0	0	1	No change
		Dropouts rates	High risk	0	-1	0	-1	Of 45 members, 18 of them are either dropped out of education or never attended (which is 40% of total sample)
		Level of Female Education	High drop outs	0	-1	0	-1	of 22 members, 8 of them are dropped outs and 9 of them never attended school

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
3	Social Safety nets	FORMAL : Knowledge of Entitlements and channels	No much information	1	0	0	1	They know and have access to certain entitlements provided by state government ex 9/11 have either BPL or ration card and all of them have gas connection	
		INFORMAL : Structure and channels	No much information	1	0	0	1	Avoided risk by not moving them to a different location. They have strong networks and channels : ex: access to informal credit sources	
4	Networks	Neighbourhood relations	It was Close knit community	0	0	-1	-1	lost connections between social networks ex: neighbours were allocated elsewhere in the other block	
		Collective Activities (Social benefits/Economic benefits/Religious benefits)	Low risk (Within communities - would help neighbours within their groups)	0	0	-1	-1	They used to help each other in daily activities ex: getting vegetables from market, looking after kids when they use to live next to each other	
5	Family Extensions	Family structure	One or multiple households/Joint family	Joint families	0	0	-1	-1	Joint families to nuclear families. Old aged people or parents started living separately - size of the new house

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Women	Household structure/ Head of family	No much information	1	0	0	1	Some of the women have got pattas in their name. Allocation of house name may not indicate who takes the major decisions in the family, but the status quo can also remain the same in this situation.
	Older People	Family support structure	Used to stay together in one house	0	0	-1	-1	Older people started living separately because of which they had to start earning and could not depend on their children
	Children	Support by Anganwadis	No information	1	0	0	1	Anganwadi run by private institution in the neighbouring colony of ASR Nagar
	Physically disabled	Access to entitlements	No information	0	0	0	0	
		Levels of compensations in project	No information	0	0	0	0	
6	Community Structure	Collective assets	Dhobi ghat - operation and maintenance by the residents	1	0	0	1	Have avoided risk by not demolishing or relocating from the existing location

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)	Notes	
7	Psychological risks	Privacy, Dignity, Safety against crime and conflict	Memory, Manifestation of shock, Insecurity (Stress) [Stratified sampling]	Low risk	1	0	0	1	Safe structures wrt cyclones, compared to what it was earlier - others also have taken shelter in these structures
			Safety	No much information	1	0	0	1	People are used to live that location - risk avoided by in situ development
			Toilets for women - use, location and number	High Risk - Open defecation - public toilets only built few years back.	1	0	0	1	risk avoided by construction of toilets - they used to go for open defecation before
			Transit housing quality and standards, Project considerations for cultural sensitivities	High risk - people temporarily moved across the highway	0	0	-1	-1	No provisions for rent provided
8	Cultural practices		Rituals and festivals	No much information	1	0	0	1	Avoided by in situ construction
Physical stock, (flow = access)					20	-7	0	13	
1	Buildings	Before and after relocation	Type of roof/ type of walls/ plinth	Temporary materials - Exposed to risks and damages during cyclones	1	0	0	1	RCC structures
			Housing typology/form	Squatters - high density	1	0	0	1	G+3
		Household level - built-up area	Modifications on provided/ modifications allowed	No much information	1	0	0	1	Whoever could afford have made modifications

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Household level	Size of the plot and covered area	No much information	0	-1	0	-1	Small size
2	Water	Quality/frequency/service provider	Low Risk	0	-1	0	-1	No mention of such issues
		Type of supply	Hand pumps + public water taps + well	0	-1	0	-1	Connections have to be installed but families have made alternate arrangements
	Sanitation	Type of disposal (before and after)	Open defecation	1	0	0	1	Septic tanks
		Type of toilet/location	Open defecation/public toilet	1	0	0	1	Attached toilets
		Planning priorities and design	None exists	1	0	0	1	Attached toilets
	Solid waste	Collection system/disposal system	None exists	0	-1	0	-1	No solid waste system in place
		Reuse (approaches at local level)	No mention of such issues	0	-1	0	-1	No plans for solid waste disposal
	Electricity	Source/type of usage	No connections	1	0	0	1	Have got connections
		Reliability / resilience (opportunity/risk)		0	-1	0	-1	Highly dependent for water pumps + frequent power cuts
	Energy	Consumption pattern (positive or negative)	used to depend of firewood	1	0	0	1	All of them have got gas connections now
Transport	Type of roads	Main road is made of cement, rest is mud	1	0	0	1	All concrete roads	

Potential Assets		Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes	
		Availability of public transportation	No change - they have access to public transportation	1	0	0	1	Avoided by in situ construction	
		Communication/ICT	Early warning systems	Government made announcements before cyclone	1	0	0	1	Have access to tv/radio/mobile and is centrally located in the city
		Social infrastructure	Health/education/information centre/temple	Government school, Dhobi ghat, temple located adjacent to the site	1	0	0	1	New community centre was built as part of the project
		Critical infrastructure	Resilience	KV and government primary school	1	0	0	1	Two schools - KV and a Government School located adjacent to the site
3	O & M	Community/individual/government/private	No information	0	0	0	0		
		Reliability	Resources available (ex: staff)	No information	0	0	0	0	
4	Land	Productivity/tenure/inundation/expenditure	No tenure	1	0	0	1	Non-alienable pattas	
		Site location/quality of soil/hazard exposure/distance from previous site	centrally located in the city next to the highway/safe from surge	1	0	0	1	Avoided by in situ construction	
5	Public spaces	Types of public spaces	One temple adjacent to the site, gather on the street	1	0	0	1	Have created a community centre	
		Play area availability and access	Play on the streets and in the school	0	-1	0	-1	No designated space - unsafe for kids because of the highway next to the site	

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Available/ usage	High	1	0	0	1	No change
			Proximity	Very close	1	0	0	1	No change
6	Trees and natural capital		Kind of ownership/type		0	0	0	0	
			Utility - (ecological balance/livelihood/quality of life)		0	0	0	0	
7	No of assets		Productive/life line assets	No much information	1	0	0	1	Use houses as small shops and some own autos
			Kind of ownership/usage	No much information	1	0	0	1	Most of them have pattas to their houses
Economic					11.5	-7.5	0	4	
1	Livelihoods - nature and composition	Type	Formal/informal	Informal	0	-1	0	-1	no change of economic activity
			Self-employed/daily wage labour	Daily wage and self - employed	0	-1	0	-1	still continuing the same work
			Diversity of income	Yes, very diversified	0.5	-0.5	0	0	Some of have started small shops etc., in the houses that they have got
		Household level	Sole/multiple earners	More than one person on an average are earners	1	0	0	1	No change
			Gender perspective	Equal	1	0	0	1	No change
		Labour	Skill and education status	traditional skills	0	-1	0	-1	No change - some women have tailoring skills, but no opportunity

Potential Assets		Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
	Pattern of consumption	Type and quantum of savings	No much information	1	0	0	1	most of them have access to bank accounts
2	Marketable and non-marketable assets	Usage and type (Ex: refrigerator, car)	No much information	1	0	0	1	most of them electronic goods, mobile, 2 wheelers, some own autos
		Economic asset ownership patterns	No much information	1	0	0	1	No change in ownership - likely to invest with no investment on housing
		House ownership	no house/land pattas before	1	0	0	1	Have got pattas for the new house
3	Access to financial services	Type (formal, informal)	Both formal and informal - bank accounts and social networks	1	0	0	1	Bank accounts for all
		How they access	Social Networks and formal channels	1	0	0	1	No change
4	Financial/capital investments	Mutual funds/bonds/savings - all channels but liquid	no savings	0	-1	0	-1	no savings
		House/land/other assets	no pattas	1	0	0	1	New house and patta
5	Risk transfer and sharing	Formal and informal (SHG, local chit funds, other channels)	Informal	1	0	0	1	No change
		Insurance - micro/business	No	0	-1	0	-1	No insurance

Potential Assets			Indicators of Measurements (Many of these need to be studies as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
			Insurance - life (health, accident)/ non-life (endowment, child, building, crop, vehicle, fire, catastrophic, weather)	No	0	-1	0	-1	No insurance
			Insurance - asset/output based	No	0	-1	0	-1	No insurance
			Cooperative/ individual arrangements	Yes	1	0	0	1	No change
Environmental					4	-2	0	2	
1	Quality and quantity of water		Scenario - before and after	No mention of such issues	1	0	0	1	No change
		State of environment	Primary and secondary impacts on individuals	No much information	1	0	0	1	No water related problems issues
		source	Surface water/ground water	Ground water	0	-1	0	-1	No change
2	Quality of air		Secondary level impacts on individuals (ex: health, respiratory problems)	No mention of such issues	0	-1	0	-1	located next to highway
3	Green cover		Type of vegetation	Urban plantation	1	0	0	1	some loss after hud-hud but growing back
			Proportion of green cover	Low/Sparse	1	0	0	1	No change
4	Biodiversity		Secondary level impacts on individuals (narrative)	None	0	0	0	0	No change

Potential Assets			Indicators of Measurements (Many of these need to be studied as changes between before and after the move)	Existing Risks/Opportunities (Status Quo)	Risks Reduced/Risks Avoided (Benefits)	Continuing Risks (Opportunity Costs for the project/Residual Costs for the people)	Risks Created (short and long-term) (macro and micro narratives of development)		Notes
Institutional/Governance and regulatory (I/G/R)					1	-0.5	-0.5	0	
1			Types of existing institutions (Formal/informal)	No much information	1	0	0	1	housing society
2		Risk created by (I/G/R)	National/state/district level	None	0	0	0	0	
			Differential impacts on other groups (community based, old aged/marginalised populations)	High (different caste based groups)	0	-0.5	-0.5	-1	Lack of sufficient entitlements for the marginalised (old and disabled in particular) continues + new issues created because of allotment of houses only to some
3	Risk to (I/G/R)	Decision leading to risks	None	0	0	0	0		
Quality of Life and Political agency					4	-2	0	2	
			Access to public transportation	low risk	1	0	0	1	No change + next to highway
			Access to primary, secondary and tertiary education	High Risk (only primary education is available)	0	-1	0	-1	schools across the highway are not accessible
			Access to public spaces		1	0	0	1	Community centre
			Access to public distribution system/any other sources	some of them have access to BPL/ration cards	1	0	0	1	no change
			Access to adequate health facilities	High risk (only a nursing home in the vicinity)	0	-1	0	-1	no change
			Access to entitlements		1	0	0	1	house patta for most
					51.5	-24	-5.5	22	



iihsTM
INDIAN INSTITUTE FOR
HUMAN SETTLEMENTS



dpu
Development
Planning Unit



FLACSO
Secretaría General



**CD
KN**
Climate & Development
Knowledge Network