DEVELOPMENT IN A CHANGING CLIMATE: LOCAL IMPACTS OF INDIA'S NATIONAL RURAL EMPLOYMENT GUARANTEE ACT IN ATTAPPADY, KERALA

UTVIKLING I ET KLIMA I ENDRING: LOKALE VIRKNINGER AV INDIA'S NATIONAL RURAL EMPLOYMENT GUARANTEE ACT I ATTAPPADY, KERALA

Philosophiae Doctor (PhD) Thesis

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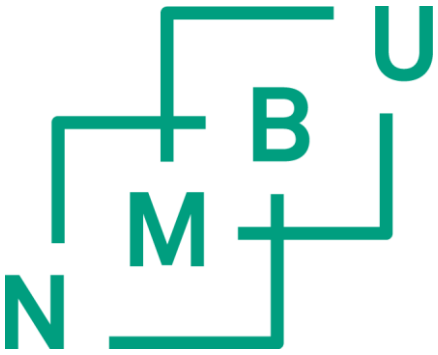

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Abstract: English

The thesis analyses the role of one of India's central social security schemes, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), in the context of climate change adaptation. A conceptual exploration and empirical analysis form the core parts of this multi-scalar study. The conceptual part explores it from the perspective of a mainstreamed, climate change adaptation policy and the empirical parts draw on data from the local level to examine its developmental effects, relevance, opportunities and limitations in this regard. A tribal development Block (Attappady) located in the south Indian state of Kerala, is the field study area and provides the core of empirical data. Located within a wider political economy frame, theoretical insights from social protection, vulnerability and adaptation thinking inform the research framework. This study shows that the MGNREGA is a relevant tool as part of India's climate change adaptation policy and an important instrument to address proximate vulnerability patterns of its rural population. Research findings from Attappady also highlight shortcomings and limitations. Underlying structural factors continue to undermine the scheme's efficaciousness and the potential for political misuse exists. While the argument of creating sustainable livelihoods through the MGNREGA cannot be supported and its most positive effects can be discerned by way of it providing a coping mechanism, albeit with limited build-up of adaptive capacities. Vulnerable and marginal population sections in Attappady are the prime beneficiaries with social outcomes being prioritised while physical productivity is a neglected aspect of the scheme. In order to exploit its potential as a tool for climate change adaptation, the MGNREGA needs to be reformed to explicitly acknowledge climate change adaptation concerns. Ultimately, the scheme can only be a constituent part in a wider process of change that addresses structural causes of vulnerability and factors that cause and contribute to anthropogenic climatic changes.

Sammendrag

Denne avhandlingen tar for seg et av Indias viktigste velferdsprogram, Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), og dets rolle i lys av tilpasninger til klimaendringer. En konseptuell utforskning og empirisk analyse utgjør hoveddelene av denne flernivåanalysen. Den konseptuelle delen undersøker MGNREGA fra et klimatilpasningspolitisk perspektiv, mens den empiriske delen baserer seg på data fra lokalt nivå for å kunne studere programmets utviklingseffekter, relevans, muligheter og begrenseringer. Avhandlingens empiriske materiale er hentet fra Attappady, en "tribal development Block" i delstaten Kerala i det sørlige India. Forskningens rammeverk henter teoretisk innsikt fra relevant litteratur om sosial trygghet, sårbarhet, og tilpasning. Avhandlingens analyser viser at MGNREGA er et relevant verktøy i Indias klimatilpasningspolitikk og er et viktig instrument for å ta tak i landsbygdbefolkningens sårbarhet. Forskningens funn fra Attappady peker også på programmets tilkortkommenhet og begrensninger. Underliggende strukturelle forhold fortsetter å undergrave programmets virksomhet, samtidig som mulighetene for politisk misbruk er tilstede. Denne forskningen gir ikke støtte til tanken om at bærekraftige leveveier kan skapes gjennom MGNREGA, mens det mest positive bidraget er muligheten for at programmet tilbyr en mulighet for mestring, om enn med begrensede muligheter for styrking av tilpasningsevnen. Sårbare deler av befolkningen i Attappady er MGNREGAs hovedmålgruppe, og der programmets sosiale effekter er sterk vektlagt, er hensyn til fysisk verdiskaping et mer forsømt område. For å få utnyttet dets potensiale som et verktøy for klimatilpasning, må MGNREGA endres slik at det eksplisitt tar inn over seg klimatilpasningshensyn. I det lange løp vil programmet kun være ett bidrag i en bredere endringsprosess som tar tak i de strukturelle årsakene til sårbarhet og faktorene som bidrar til menneskeskapte klimaendringer.

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List of abbreviations

ADS	area development society
AHADS	Attappady Hill Area Development Society
AR	Assessment Report
CDS	community development society
COP	Conference of Parties
EGS	Employment Guarantee Scheme
GHG	greenhouse gas
GOI	Government of India
GOK	Government of Kerala
INR	Indian Rupee
IPCC	Intergovernmental Panel on Climate Change
ITDP	Integrated Tribal Development Programe
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Scheme
MORD	Ministry of Rural Development
MOEF	Ministry of Environment and Forests
NAPCC	National Action Plan on Climate Change
PWP	Public Works Programme
SAPCC	State Action Plan on Climate Change
SC	Scheduled Caste
SP	social protection
ST	Scheduled Tribe
UNFCCC	United Nations Framework Convention on Climate Change

Part I

Introduction

1 Introduction

1.1 Context and background

India's economy and society have experienced dramatic changes over the past two decades. Following the liberalisation era of the 1990s, the country has emerged from the throes of the 'Hindu rate of growth'[1] to become one of the fastest-growing major economies in the world today. Its per capita income has risen, relative poverty ratios have declined and a new middle class has emerged. Slowly but steadily, this shift has been driving the country from being a traditional, agriculture-based society and economy to one that transitions towards industrialisation and urbanisation. It has not been the only country to do so, but rather stands out as an example in a broader process of change that has enveloped many developing countries all over the world – at an accelerating pace. India is a distinct, major player in this – not least because of the sheer size of its population.

The process of rapid change has come with costs, opportunities and contradictions that affect all realms of social, political and economic life and their constituents. One of the major issues that has arisen is the often intractable choice between balancing concerns for economic development and environmental protection. Pollution of life support systems, disappearance of natural habitats and species, degraded natural resource bases and climatic changes have become unprecedented in scale and intensity. These have started to pose threats to existing livelihood systems and increasingly put question marks on the sustainability, desirability and direction that future economic growth and development models can and will take.

The reality of anthropogenically induced, global climatic change[2] figures at the top on the list of concerns that influence and determine prospective development models and desired outcomes. Concerns over the growth of GHG (greenhouse gas) emissions are intrinsically linked to the expansion of industrial, consumer economies. While initially it was western, so-called 'first world

[1] A term used to describe India's slow but steady economic growth rate in the 1980s.

[2] Also referred to as 'global warming'.

countries' that set the pace in industrialising their economies, developing countries such as India followed, and are following, suit. The resultant change in the atmospheric composition and its effects on the earth's climatic systems has become a hotly debated topic that has progressively drawn the attention of scientists, policymakers, politicians and civil society actors alike.

Initially encapsulated in a general report prepared by the Brundtland Commission of 1987, concerns about climate change were crystallised following the Earth Summit in 1992. Subsequent developments set in motion discussions that led to the setting up of the United Nations Framework Convention on Climate Change (UNFCCC). This is a non-binding, global agreement that seeks to coordinate efforts of all the parties involved to find a common, equitable solution to the 'climate problem'. Informed by scientific findings of the Intergovernmental Panel on Climate Change (IPCC) on the potentially dangerous impacts of climate change, it set out to pursue implementable solutions that help mitigate and adapt to climatic changes. In the words of the IPCC, 'managing the risks of climate change involves adaptation and mitigation decisions with implications for future generations, economies, and environments' (IPCC, 2014:32).

The need for action, its broad contours and the serious impacts and future threats posed by climate change – especially to rural population segments in the global south – have been under deliberation for quite some time (Bolin, 2007). Albeit, these deliberations have little follow-up action to show for. Implementable policy that is scaled, legitimate, equitable, efficient and efficacious remains sorely lacking (Bojanowski, 2012; Jamieson, 2014). Worryingly, emission scenarios suggest that targets to cap GHG emissions at 'acceptable levels' are becoming difficult to realise within a scientifically recommended time frame (Anderson and Bows, 2011). Reasons for the protracted delay on a game-changing treaty have been numerous and are located in the differentiated historic responsibility of climate change (equity)[3], the officiated need for countries to industrialise and remain so (development model), lack of viable financing (capacity), geopolitical considerations and so forth. Consequently, constructive answers to this lengthy and complex process have been

[3] A key cause of disagreement in the negotiation process relates to the 'carbon budget' already taken up by past emissions of developed countries at the time of their industrialisation and their historic responsibility of contributing to the climate change problem.

hard to come by and cannot be situated outside the aforementioned broad realms and their distinct spatial and temporal dimensions.

These issues form the backdrop and provide impetus for the research carried out in this thesis. Its central aim is to contribute to the climate development debate, with specific reference to India and its most vulnerable rural population sections. In doing so, the thesis employs a multi-scale study that connects the global to local, incorporates questions of national and local development and focuses on issues related to vulnerability, adaptation and concomitant development planning.

1.2 **Situating the study**

Despite India's recent, phenomenal wealth accumulation, it remains a fissured country characterised by contradictions of wealth and chronic poverty, social exclusion and a widening chasm between urban and rural areas (Dreze and Sen, 2013). The majority of its population (69% or 830 million people) remains in rural areas and is overwhelmingly dependent on the climate-sensitive primary sector (agriculture, forestry, fisheries). Poverty rates remain disturbingly high, with estimates of 31 per cent of the population continuing to be affected by it (GOI, 2014a). Additionally, India is one of the most climate-vulnerable countries in the world and the exacerbation of climatic changes are projected to put additional stress on already vulnerable population segments (Maplecroft 2014; Hijioka et al., 2014).

India's rural development history and policy are diverse and are often researched for pioneering interventions, with moderate successes and frequent failures (IDFC Rural Development Network, 2013; Dreze and Sen, 2002 and 2013; Rudolph and Rudolph, 1987). One of the central components that have lined its development edifice are public works programmes[4] (PWPs). They have been part and parcel of its development strategy since the late 1960s and continue to be so today. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA[5]) is the latest entrant to this line of state interventions and funded by the central government. It was passed as an Act in

[4] Alternatively referred to wage employment programmes.

[5] Initially referred to as National Rural Employment Guarantee Act in 2005, the scheme's name was changed to 'The Mahatma Gandhi National Rural Employment Guarantee Act' in 2009. Some studies also use the affix of NREGS or MGNREGS. This study uses the official Acts name and refers to it as MGNREGA or 'the scheme' from now on (MoRD, 2010).

2005 (NREGA, 2005) and is one of the largest PWPs in the world today. Since then, it has emerged as one of the most significant and visible tools for rural development and social protection, after the introduction of neo-liberal reforms in 1991.

The scheme covers all rural areas of India and at its heart guarantees at least 100 days of productive employment to every rural household against a minimum wage to create assets and support livelihood sustenance and recovery (NREGA, 2005; MoRD, 2013a). Policymakers and academics over the world have taken cognisance of the scheme and its 'model role' and mechanisms in fighting poverty (World Bank, 2013). Subsequently, it was also identified by the Government of India (GOI) to become part of its climate policy. The principal documents that mark its entry into the climate change discourse are the National Action Plan on Climate Change (NAPCC) and the second Communication to the UNFCCC (GOI, 2008; MoEF, 2012). Implicitly and explicitly, they suggest the role that the scheme can assume in mitigating and particularly in helping adapt to climatic changes. Its inclusion in national policy coincided with increasing disenchantment with the prevailing process of international climate negotiations, increased attention to adaptation in domestic policy and the entry of mainstreaming of climate change issues into existing development planning.

Even so, the connection between the MGNREGA and its climate role has remained rather tenuous. Its entry has been marked without drawing clear causal connections, incorporating analysis of empirical data, critically discussing concept and methodology, exploring opportunities or outlining limitations. A comprehensive understanding of its role as an instrument to foster adaptation efforts is thus incomplete.

It is in this context that an initial research interest in exploring the MGNREGA and its climate role was formed. For the purpose of this research, a case study design was chosen to examine the MGNREGA and the climate roles it assumes. In addition to the conceptual part of this study, an empirical component draws on data from a tribal[6] development block in the south Indian state of

[6] The term 'tribal' officially describes the marginalised, indigenous communities of India. Alternatively they are also termed 'Adivasi' or in official documents as ST (Scheduled Tribe).

Kerala, that is, Attappady[7]. Kerala has been called 'a state that defies descriptions', which widely characterises India's development conditions (Parayil, 1996). Its social development indicators are more reflective of those of a developed country. High literacy rates, life expectancy, improved health indicators, relatively less extreme poverty and widespread access to healthcare services are some of its hallmarks (Oommen, 1999). The Kerala model of development and its lopsided development indicators (high social development, low per capita income) have gained widespread publicity (Oommen, 1999). Attappady on the other hand, falls out of this picture. Its development conditions provide a stark contrast to the rest of Kerala. Impoverishment, malnutrition, a marginalised tribal community, ecological degradation and rapid environmental change characterise it (Manikandan, 2014; Sathis, 1989).

The MGNREGA was assigned an important role in ameliorating detrimental development conditions at a national and local level. It is from this scenario that the research seeks to draw local and national, as well as more general insights that can be inferred from the impacts, mechanisms and roles that the MGNREGA assumes within the contextual conditions of India and the field study area. Findings are expected to feed into and inform discussions on the development policy–climate nexus.

1.3 Objectives of the study

The central objective of this thesis is to understand the role that a development scheme can assume in the context of international and national climate (adaptation) policy and to critically examine its functioning and mechanisms with respect to addressing local adaptation and development concerns. Research is carried out within the broad realm of a political economy perspective.
Specific objectives and research questions are outlined as follows:

1. To explore the climate–development role of the MGNREGA within the framework of international and national climate adaptation debates.

[7] Other common designations are 'Attapady' or 'Attappadi'. 'Attappady' is used in official documentation and for consistency is used throughout the study.

- Where can the ‘climate role’ of the MGNREGA be located and opportunities identified?
- Does the scheme satisfy normative benchmarks that describe sustainable and pro-poor adaptation action?
- What do existing research findings on its functioning suggest and how can they be interpreted?

2. To study the impact of the MGNREGA on livelihood and vulnerability patterns in Attappady.
   - How and to what extent does the MGNREGA exercise influence on variables that are relevant for vulnerability reduction and adaptation?
   - What socio-economic impacts and outcomes can be discerned, especially for the most vulnerable population segments?
   - What relevance do these findings hold in the context of mainstreaming in India?

3. To analyse participatory effects and social dynamics of the MGREGA through worksites.
   - How inclusive and responsive is the decision making process of the demands and needs of intended beneficiaries?
   - What internal dynamics can be discerned at worksites?
   - Which factors influence, and what outcomes can be observed from an instrumental and developmental point of view?

4. To explore challenges to and trajectories of adaptation in Attappady.
   - Which adaptation pathways can be discerned in Attappady?
   - What are the central challenges and barriers faced by them?

1.4 Structure of the thesis

The thesis consists of four independent papers, which explore these research objectives and questions respectively. In order to bring them together to form a coherent whole, additional elaboration is required. For this purpose, the first part of this thesis provides an extensive

introduction that includes relevant supplements, additions, contextual information and theoretical discussions to facilitate overall cohesion. Specifically, more information and detail is provided on the MGNREGA, its features and governance modes. In addition, a more elaborate description of the field study area, its development history, ethnography, socio-economic characteristics and resource use patterns is advanced.

The remainder of the introduction is arranged as follows. Section 2 provides the theoretical and conceptual base. At first, a brief overview is provided on climate change policy and concomitant issues in international and domestic fora. This is followed by an elaboration of theoretical positions, interpretations and their respective linkages. Namely, concerning vulnerability, adaptation and mainstreamed development policy. Section 3 briefly delineates a framework for the research and its individual papers, based on the discussions laid out in the previous section. Section 4 describes the study area within which the core of this research has been carried out. Background information on the state of Kerala, Attappady and its tribal community are provided. The fifth section comprises deliberations on the methodology and research challenges. The introduction is concluded by furnishing a synthesis of the papers and research findings.
Part two of the thesis includes the four individual research papers, arranged in the following order:

1) Adam, H.N., 2014. Mainstreaming adaptation in India – the Mahatma Gandhi National Rural Employment Guarantee Act and climate change. *Climate and Development*. [online] Available at: http://www.tandfonline.com/doi/pdf/10.1080/17565529.2014.934772 doi: 10.1080/17565529.2014.934772

2) Adam, H.N, (forthcoming). Mainstreamed adaptation in practice: India's MGNREGA in Attappady Block – A case study. *Journal of Development Studies*. Routledge (under review).

3) Adam, H.N., (forthcoming). Unpacking worksite participation and social dynamics of the MGNREGA in Kerala, South India. *Forum for Development Studies*. Taylor and Francis. (submitted)

4) Adam, H.N., Adaptation trajectories and challenges in Attappady, south India (manuscript).

2 Perspectives on climate and development

At first glance, the relationship between climate and development in their basic manifestations may appear obvious. Beyond an intuitive understanding, this relationship remains a topic of scientific debate that has courted controversy and garnered an unprecedented level of research attention from natural and social scientists. Climate change and its anthropogenic drivers have become part of a scientifically informed discourse which is established and accepted. According to the IPCC (Stocker et al. 2013:4), 'warming of the climate system is unequivocal' and in all probability is linked to the rise of GHG emissions on account of human activities.

Activities linked to the mitigation of and adaptation to climatic changes, have not kept pace with increasingly dire predictions and scenarios. Interpretations, and the understanding of adaptation in particular, do not achieve the same kind of consensus that exists on the mitigation front; they have only recently received serious attention. This fact has repercussions on policy and programmatic implementation. The purpose of this section is to crystallise the understanding of climate change adaptation and associated theoretical perspectives that inform this research. The section also provides a concise overview of climate change issues and policy debates in India, the Indian rural development context, details on the MGNREGA and the linkages that exist between respectively embedded conceptual and theoretical perspectives.

2.1 International stalemate?

A glance at the history of global climate change negotiations gives way to sobering reading. From the celebrated first Conference of Parties under the UNFCCC process in 1995, to the recently held climate summit in Lima (2014), the achievements and outcomes of the process have been modest. Drawn up with the ambition to stem the problem of rapidly increasing GHG emissions and their attendant impacts, the UNFCCC was bestowed with the twin aims of chiefly assisting mitigation of climate change and helping societies adapt to its effects. Its key milestone was the Kyoto protocol[8] – which was ratified and came into effect in 2005 with 83 countries as signatories. Its

[8] The Kyoto protocol is the only legally binding climate treaty currently in place and was adopted in 1997, in Kyoto, Japan.

main targets have been to stabilise or reduce the GHG emissions produced by a set of industrialised countries. This involves establishing binding emission targets, and helping to finance mitigation and adaptation activities in developing and transforming countries. Some successes have been recorded, but these pale in comparison to the scientifically set targets to be reached in order to avoid so-called dangerous warming thresholds (Clark, 2012). The IPCC-informed view is that atmospheric concentrations of the principal, anthropogenically induced GHG (CO^2)[9], has to be capped at 450 parts per million to limit warming at 2 ˚C. At the 15th COP in Copenhagen in 2009, world leaders agreed to work towards this goal but without setting enforceable targets (UNFCCC, 2009). Rather than agreeing to set up structures and timetable for a new treaty, the Kyoto protocol was extended with minor modifications (UNFCCC, 2012). Meanwhile, growth of GHG emissions in developing and transforming economies (particularly in the BRICS/Brazil, Russia, India, China, South Africa) and in some developed countries like the USA, have continued unabated. Compared to 1990 levels, global CO^2 emissions have jumped by 60 per cent in 2014 (Jung et al., 2015). Growth in emissions, in combination with an elusive climate treaty, continue to put question marks on the continuation of the negotiation process, its outcomes and achievability of the 2 ˚C target – which some quarters already deem as unrealistic (Anderson and Bows, 2011). Why has a climate treaty and concerted action remained so elusive? No easy answer exists to this question. It is embedded in a complex web of interrelated social, political, cultural and economic issues that involve questions of distributive and environmental justice, technology options and their dissemination and historically rooted development processes – all embedded in different spatial and temporal scales within a global political economy (Klein, 2014; Jamieson, 2014; Giddens 2009; Bolin, 2007; Miranda et al., 2011). In totality, they contribute to making climate change one of the defining development challenges of the 21st century.

In terms of policy implications, the realisation has set in that climate policy, both on the mitigation and the adaptation front, cannot be divorced from present day development challenges (Watkins, 2007; UNEP, 2014). Poverty eradication, equality, social justice, public health, population growth and economic stability pose formidable challenges at present and remain important in polity and in the everyday, experienced lives of people. This is even more acutely so in developing countries

[9] Expressed in CO^2 equivalents.

of the global south. Acknowledging, reflecting and incorporating these into considerations of climate policy is a prerequisite for the drawing up of legitimate and sustainable development pathways.

In conjunction with the growing disenchantment in the international negotiation process, attention has shifted to a two-track approach that involves independent, national action to supplement possible international one and there has been a perceptible shift to deliberations on adaptation.

2.2 India and climate change in context – a brief overview

India is one of the countries considered to be at the highest risk from global warming (Hijioka et al., 2014; Maplecroft, 2014). It is primarily subtropical with a long coastline, it exhibits a strong dependency on the monsoon for water and energy needs, and a large part of its riverine system is reliant on the sensitive Himalayan ecosystem. The latest report from the IPCC (Hijioka et al., 2014) highlights the additional impacts from climate change that the South Asian region can expect. These include rises in average temperature, higher rainfall variability, changes in river flow regimes, sea-level rise and flooding. In conjunction with socio-economic dynamics and drivers, these can have an attendant, cascading effect on food security, population health and water availability. The agrarian character of India's society and economy, with the rural populations' dependence on climate-related services, puts people and their livelihoods further at risk.

India has been a key driver and partner in the international climate negotiation process – but it was not until recently that the issue figured more prominently on the list of priorities in domestic fora. In 2008, the GOI launched the NAPCC (GOI, 2008), which until the time of writing is the single most important document that outlines the broad contours of India's nascent climate policy. Eight national missions are outlined therein, with a distinct focus on mitigation activities but no concrete or binding emission targets. It is argued that, based on the principle of 'common but differentiated responsibilities' (UNFCCC, 1992:3), India has a legitimate right to claim a portion of 'carbon space' for its economy to develop and to pull people out of poverty. While perceived as justifiable, the position and its supporting document has been criticised for indulging in a business-as-usual scenario without seriously engaging in a domestic debate on redirecting its growth to a climate-resilient, socially just and sustainable pathway (Bidwai, 2012). As of 2014, India is the third largest

emitter of GHGs in the world and emissions have grown by 200 per cent over the 1990–2014 period; however, its per capita emissions stand at a fraction of those of developed countries (Chander, 2014). Low per capita emissions vis-à-vis other developed countries and the prospect of substantially adding to aggregate emissions in future (without a visible prospect for caps) are symptomatic of the quagmire of climate change negotiations with respect to mitigation. In 2009, voluntary reductions of 20 to 25 per cent in the carbon intensity of the gross domestic product from 2005 levels were announced, and a number of renewable energy initiatives were put in place, to be achieved by 2020 (Byravan and Bharadwaj, 2014). However, in the larger context of staving of emission growth beyond acceptable levels and preventing possibly more severe climate impacts, these have been deemed insufficient (Bidwai, 2012). The GOI has repeatedly asserted that it requires financial, technological, managerial and institutional assistance from bilateral and international partners, through associated architectures, to decidedly move ahead on climate change mitigation and adaptation (GOI, 2008; Michaelow and Michaelowa, 2012). Questions exist on the 'politics and economics of possibility' in this regard. India's growing clout as an emerging economic powerhouse, internal constraints by donor countries and agencies, and a lack of consensus on appropriate mechanisms are stumbling blocks for external assistance to reach India in commensurate volumes. Internationally, there has been a growing emphasis on adaptation action and it has been identified as a policy imperative for the 21st century (Bojanowski, 2012; UNEP, 2014). The executive director of the United Nations Environmental Programme (UNEP) states:

> Some argue that the global economy cannot afford adaptation. But, as the latest evidence shows, delaying action will mean higher costs later. If we truly want to build a sustainable, prosperous, and equitable future, we cannot afford to wait (Steiner, 2015).

Global funding estimates for adaptation have been estimated to far exceed the initially suggested USD 70 to 100 billion per year by 2050 (UNEP, 2014). Although negotiations on an international agreement are similarly protracted, there has been domestic movement. The NAPCC (GOI, 2008) largely sidesteps climate adaptation planning and the second national Communication to the UNFCCC loosely highlights biophysical assessments and designates social programmes for adaptation purposes (MoEF, 2012). However, of late, India has called for giving climate change adaptation and mitigation equal weight (Abhyankar, 2014). This has found expression by way of

State Action Plans on Climate Change (SAPCC). In 2009, the Prime Minister asked states to develop them and the SAPCC's are at various stages of preparation and implementation. During 2014, 28 states and union territories prepared drafts, and the Expert Committee on Climate Change (MoEF, 2014) approved 19 of these. A preliminary study of them exhibits a relative focus on adaptation, largely on account of the perceived adaptation–development linkages inherent in development projects (Dubash and Jogesh, 2014). At the same time, existing shortcomings are linked to conceptual understandings of adaptation and methodological issues, which lack uniform understanding, especially in vulnerability assessments (Dhanpal and Panda, 2014).

It emerges that mainstreaming of climate and development issues is a focal area in the SAPCC but lacks vision, understanding, definitional accuracy and uniformity besides being caught in a complex web of global, national and local governance and development issues (Dubash and Jogesh, 2014; Dhanpal and Panda, 2014). Kerala's draft SAPCC (GOK, 2014) considers specific vulnerabilities of the state (long coastline, fragile mountain range) and also briefly incorporates social concerns. But overall, it concentrates on unspecified, sectoral targets (forestry, water resource management, agriculture) and does not define any methodology on what constitutes vulnerability or how it can be assessed outside existing biophysical indicators. Monitoring mechanisms remain to be worked out and the document refers to the NAPCC as providing the platform from which it is developed, with tied limitations.

2.3 Reflections on adaptation, vulnerability and development policy

Adaptation to climatic changes is a time-tested attribute of human societies. In essence, it encompasses a wide arena of processes, actions and outcomes that allow communities to survive, persist and thrive within a given social and ecological context. Historically, both successes and failures have been recorded (Diamond, 2005). Examples of forms and sectors that adaptation can involve are: water resource management (irrigation), insurance (weather indices), seed development (drought resistant varieties), building codes (heat insulation), institution building, behavioural change and meteorological forecasting. All of these are practised examples of how social systems have adapted and are adapting to instances of environmental change, including its climatic component. As a concept, adaptation remains contested and across scientific disciplines

implies different things to different researchers. No single, universally accepted definition or conceptualisation exists, as will be shown later in this section.

The research origins of adaptation lie in the natural sciences, particularly in evolutionary biology but there has also been an increasing emphasis on the subject within the social sciences (Pelling, 2011). In light of mounting evidence and alarm on global warming, research in the field has spawned added attention and vigour. The IPCC, in its fifth assessment report (AR5) defines it as a 'process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities' (IPCC, 2014a:5).

Adaptation in human–environment systems draws on a rich and diverse literature. At the basis of these research efforts lies an attempt to identify conditions and processes that shape individual and collective vulnerability. The IPCC defines vulnerability concisely as 'the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt' (IPCC 2014a:5). What definitions of vulnerability share (including that of the IPCC) is that they are composed of sensitivity, exposure and adaptive capacity (Adger, 2006). Exposure is the stress a system is experiencing from biophysical as well as social forces; sensitivity is the degree to which perturbations affect and change the system, and adaptive capacity is the ability to respond and evolve a response to these stresses.

Resilience theory plays an important role in defining and understanding system responses to change and stress, in some spheres exhibiting similarities with vulnerability thinking (commonalities across understanding of coping responses), while in other spheres fundamentally differing (vulnerability as the opposite to resilience) (Miller et al., 2010; Gallopin, 2006). It has become a much debated and applied concept in adaptation studies. The roots of resilience thinking lie in ecology (Holling, 1973), originally referring to technical, system theory-orientated attributes of a system and refers to the ability of a system to 'absorb change and disturbance and still maintain the same relationships between populations or state variables' (Holling, 1973:14). With modifications and developments, the basic precepts have been translated to study coupled socio-ecological systems. Mitchell and Harris (2012:2) has defined resilience more recently as a process

that refers to 'the ability to resist, recover from or adapt to the effects of a shock or a change'. One of the central differences that make resilience a less useful concept to apply when studying poverty is, as Bene et al. (2012) show, that it is not a 'pro-poor' concept by virtue of a lack of critical engagement with poverty. Poor people might be resilient, but that does not imply that poverty is a desirable state to be in. The authors argue that while resilience is not described as a 'positive' state per se, it is neutral, without any value implications and consequently suffers from severe limitation when questions of development are involved. Gallopin (2006) comments that resilience refers to internal system properties and dynamics, thereby excluding outside exposure elements to system perturbations, included otherwise in vulnerability thinking. In a similar vein to Bene et al. (2012), they argue that resilience does not refer to transformative processes. Given these limitations of resilience theory, I have chosen a vulnerability perspective to approach this study.

Concepts and perspectives here draw on the political economy of resource use, social relations, natural hazards, biophysical studies, food security, entitlement theory or human and political ecology (see for overview Kelly and Adger, 2000; Adger, 2006; Ribot, 2013). All of these writings, on their own or in combination, provide differing conceptualisations of what puts individuals or communities and their livelihoods at risk from environmental change – with respect to units and tempo-spatial scales under study.

Ribot (2010) identifies three overlapping, yet distinct approaches in vulnerability analysis. At one end of the spectrum lie social constructivist approaches that are employed first and foremost by the development community. Research studies here draw heavily on livelihood and entitlement theories. They document and explain how risk to livelihoods is essentially a socially generated phenomenon, whose causality can be located in institutions, class, wealth, gender, asset bases and power relations (Sen, 1981; Scoones et al., 1996, Chambers and Conway, 1992; Dreze and Sen, 1989; Downing et al., 1995). The approaches seek to answer how and why risk is socially distributed differentially, including with interactions at higher scales. While not ignoring environmental variables, social constructivist approaches treat them as one among a subset of several causal factors. In essence, they argue that risk to environmental change is a humanly created and socially driven process. For example, marginalised people living in a given locality are more likely to suffer intense damage to their assets, loss of livelihood and have a diminished

ability to recover from hazard events due to limited information, power, wealth and social networks (Ribot, 2010). Their exposed location in itself being a re-production of inequality, poverty and dominant power relations. Their 'better off' peers in the same space are unlikely to suffer the same debilitating consequences and are less likely to live in a hazard prone locality. Social constructivist approaches have also played a key role in dispelling Malthusian[10] and neo-Malthusian notions by providing credible alternative explanations on how famines and food insecurity are socially generated processes and events.

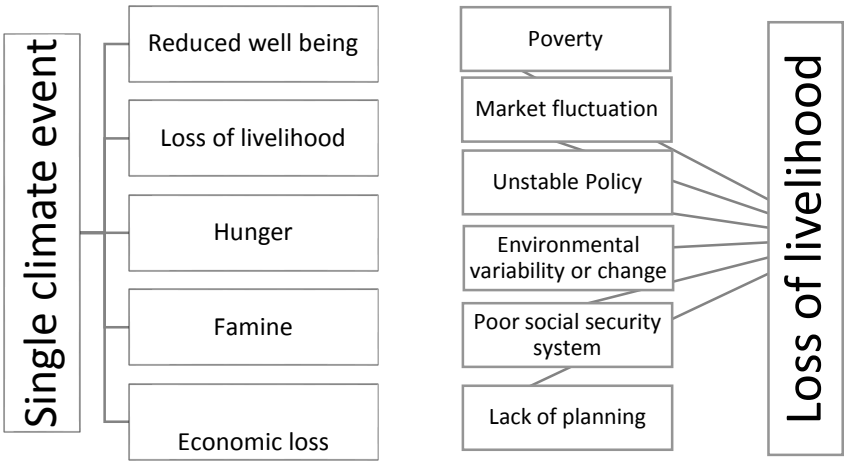
Risk hazard approaches, at the other end of the spectrum, are typically used by the disaster–risk management community and trace risk causality from multiple impacts of natural hazards, including climatic events (Burton, Kates and White, 1993). Adaptation strategies to these hazards are manifold and can involve a spread of risk and loss, enduring the loss, prevent detrimental after effects, change the nature of the event itself and modify or shift from the (Burton, Kates and White, 1993). Figure 1 depicts a simplified representation of the contrasting views.

Integrative approaches tend to be extensions of social constructivist perspectives but are informed by a unit-based risk analysis. The pressure and release model (Blaikie et al., 1994), Watts and Bohle's 'spaces of vulnerability' (1993a,b) and the vulnerability framework of Turner et al. (2003) fall into this category and are the most prominent examples. These approaches provide for the incorporation of applicable, place-based attributes, from both the social and environmental spheres. Units of analysis can involve several scales (individuals, households, communities and larger units) and multiple dimensions, that is, social,economib, political and ecological.

[10] Malthusian ideas highlight biophysical limits to population growth and wellbeing. They originated with the publication of 'An Essay on the Principle of Population' (1798) by Thomas Malthus.

Figure 1. Risk hazard and social constructivist approaches

(a) Risk hazard approach (b) Social constructivist approach



Source: Ribot, 2010

Adaptations intend to offset vulnerabilities, including to environmental change. The framing of vulnerability has repercussions on research agendas and knowledge production, which in turn inform policy processes and choices (Kelly and Adger, 2000; O'Brien et al., 2007).

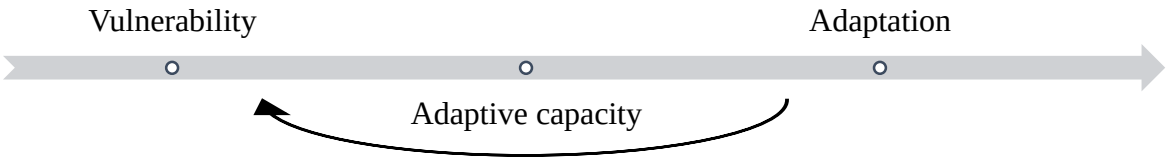
With respect to climate research, Kelly and Adger (2000) dichotomise vulnerability framings into end and starting point interpretations. The former sees vulnerabilities as the 'end point of a sequence of analysis beginning with projection of future emission trends, moving on to the development of climate scenarios and thence to biophysical impact studies and the identification of adaptation options' (Kelly and Adger, 2000:326). Starting point approaches explain vulnerability as an essentially socially generated phenomenon (as shown in Figure 1). O'Brien et al. (2007) build on these interpretations and coalesce them into outcome and contextual vulnerabilities. Outcome vulnerability represents the residual vulnerability after adaptations have been undertaken and is linked to a scientific lens. Contextual vulnerability encompasses multidimensional factors and processes that generate vulnerability and is connected to a human security[11] lens. A scientific or natural science lens is underpinned by a reductionist, static, systems theory-orientated understanding of nature–society linkages; in which contextual vulnerability

[11] Emphasises a rights-based framework to promote human wellbeing.

recognises dynamic and fluid social, economic, ecological cultural and political interactions, processes and values (O'Brien and Barnett, 2013).

Figure 2. Visualisation of the different pathways that framings of vulnerability precipitate

(a) **Contextual vulnerability**



(b) **Outcome vulnerability**

Source: Author's illustration

Adaptive capacity is an integral concept in adaptation studies and encompasses a spectrum of attributes that describe the generic capacities of a system or community to adjust or moderate potential damages and take advantages of opportunities. Functionally, it can comprise physical as well as social factors, such as wealth (for example gross domestic product), institutional capacity, education, technology, infrastructure or equity (Smit and Pilifosova, 2003). Adaptations are contingent on adaptive capacity but can themselves enhance it and can consequently be part of a mutually re-enforcing process.

It is important to clarify the relationship between coping and adaptation here, which are dynamically linked processes, where one can further the other. Coping actions can reduce the need for adaptation or adaptation enhance coping ability (Eriksen, Brown and Kelly, 2005). On the other they are identified as distinct processes as well, distinguished by tempo-spatial timescales involved (Smithers and Smit, 1997). Coping tends to be short-term and could involve days or months, wherein adaptation involves longer timescales stretching to multiple years or beyond.

Political economic approaches in this field place distinct emphasis on governance and institutional factors to enhance response capacities. Public policies, property rights, institutional arrangements, laws and rights are constitutive parts in them and are shown to be instrumental in levying responses and capacities (Adger et al., 2005; Agrawal, 2008; Brooks et al., 2005; Engle and Lemos, 2010; Smit and Pilifosova, 2003).

The role of adaptive capacities in adaptation is similarly subsumed by and contingent on the framing of vulnerability and the climate change problem, with attendant consequences, as depicted in Figure 2. Depending on the causality drawn, addressing vulnerability either precipitates adaptive capacity and adaptations, or vice-versa. Policy implications are that outcome vulnerability pivots around increasing adaptive capacity through techno-managerial processes that dominantly invite physical, technical or engineering solutions, for example in the form of improved seed varieties or physical defence structures. Tanner and Horn-Phathanothai (2014:6) criticise existing attempts of viewing adaptation sweepingly through this lens by highlighting that 'climate change issues are often related to specialized environmental or disaster-response authorities that view them in narrow technical terms. These specialised authorities are ill equipped to respond to the full spectrum of development challenges that climate change raises'.

Contextual vulnerability, in contrast, concentrates on policy interventions that are described in political economic approaches. These pay attention to population sections most susceptible to climatic changes and to present day, dynamic socio-economic processes that incorporate aspects of equity, justice and access and control over resources that in turn shape vulnerability (Kelly and Adger, 2000; Burton et al., 2002, Adger, 1999; O'Brien, 2007). It should be noted that this does not exclude physical aspects of adaptation, which are relevant, but rather sees these type of interventions as a subset among other factors that create and condition vulnerability to climate change.

In terms of research on climate change adaptation, four general categories can be discerned (Smit and Wandel, 2006). These are assessing the overall net impact of climate change impacts through quantitative modelling, analysing the comparative benefits, costs and potential impacts of alternate adaptation options, investigating the relative adaptive capacity and vulnerability of regions,

countries or other tendentiously larger units (national, state, regional), and researching community adaptation processes, needs and the impact of implemented policies on these. Compared to the other three streams, the last deals with more practical issues and has gained ascendancy due to the adoption of mainstreaming of development and climate policies, which will be discussed in the next section.

This thesis falls within the last stream, that is, it investigates a practical adaptation intervention through the analysis of a mainstreamed development initiative. For this purpose, it draws upon a contextual interpretation of vulnerability and elements from an eclectic mix of theories and methods subsumed under it. A more detailed explanation on the research framework follows in section 3.

2.4 Mainstreaming of development and adaptation policy

The idea of mainstreaming proposes the merging of specific development goals and targets into existing policy and promoting them through prevailing agencies and institutions. In the development sector, it has been tried and tested most prominently in the gender field. According to Mehra and Gupta (2006), the idealised goals of mainstreaming are to promote equality and empowerment across a wide range of interventions and put these at the top of development agendas of governments, multilateral agencies and non-governmental organisations. Results have been mixed at best, with a number of deficiencies in process and lack of tangible outcomes still characterising proposed and existing interventions (Moser and Moser, 2005).
Mainstreaming of climate adaptation into development planning is of more recent origin, and has seen a gradual rise to prominence. It refers to:

> the iterative process of integrating considerations of climate change adaptation into policy-making, budgeting, implementation and monitoring processes at national, sector and sub-national levels. It is a multi-year, multi-stakeholder effort grounded in the contribution of climate change adaptation to human well-being, pro-poor economic growth, and achievement of the MDGs (UNDP-UNEP, 2011:3).

Alternatively, it is termed a ‘no regrets’ or ‘win-win’ strategy. The reasons for elevating it into the list of policy priorities have been numerous and are briefly synthesised below (Heltberg, Siegel

and Jorgensen, 2009; Huq, Reid and Murray , 2006; OECD, 2009; Huq et al., 2004; Sietz, Boschütz and Klein, 2011; Newell, 2004; Lasco et al., 2009; Anderson, 2012; Klein et al., 2007; O'Brien, et al., 2007).

(i) Linkages between climate policy and sustainable development

Treating climate change issues in isolation from present day development challenges runs counter to principles espoused by sustainable development thinking[12]. The integration of environmental and development concerns is not new, but the climate change community has assigned less weight to the social policy side and instead has concentrated on long-term prospective impacts and planning informed by modelling and static, scientific data. A natural science framing and focus of the climate problem has contributed to this. It is only in later IPCC Assessment Reports (AR), and specifically in the fifth AR (IPCC, 2014), that gradual cognisance of the climate–development-social policy linkages is taken. It is argued that, in the absence of such a recognition, opportunities for adaptation might not be identified. It is also argued that risks of maladaptation[13] exist, that resources will not be utilised efficiently and that societies are not adequately prepared to manage climate risks. Mainstreaming is subsequently perceived as a policy approach rife for inclusion.

(ii) Capacity constraints

Developing and least developed countries are unlikely to set up separate structures and institutions for adaptation planning due to resource constraints. Utilising existing ones is viewed as a more pragmatic approach that considers operational constraints and can be one of the most important contributions that governments can make to reduce costs and provide for climate protection.

[12] Based on pillars of social, economic and environmental considerations that emphasis equity, justice, fairness and environmental protection.

[13] Maladaptation refers to adaptation action that unintentionally increases vulnerability for other societal sections (Barnett and O'Neill, 2009).

(iii) The international climate change negotiation process

The international climate negotiation process has paid less attention to adaptation, but the risk stemming from climatic impacts has been rising steadily. Searching for financial architectures and regimes that allow adaptation processes to be scaled up significantly have so far not been able to be operationalised and it remains questionable when (or if) they will be in the foreseeable future. The adoption of a mainstreaming approach is understood to be a viable alternative. Developing countries, in particular, are unlikely to take decisions without the possibility of garnering (immediate) co-benefits. Mainstreaming allows governments to take autonomous action outside the international process, while reserving the possibility to leverage them in future. National and international NGOs concomitantly started to incorporate climate concerns in their development portfolios.

(iv) Pro-poor policy

Policy interventions are needed immediately to increase the capacity of communities to adapt. Long-term climate impacts and present weather variability are hard to distinguish and, by extension, a better ability to cope with present variability can help prepare communities for future changes. Also, lived impacts tend to be localised and are difficult to quantify. A contextual framing of vulnerability in this respect understands the manifested impact of climate scenarios as uncertain. Rather than adapting solely to uncertain futures, it is advocated – including in this thesis – that present day vulnerabilities, addressed through mainstreamed policy, are needed to alter vulnerability patterns and increase adaptive capacities. This is required on scales that include the vast number of poor people who are reliant on climate-sensitive sectors of the economy. Existing policy has been identified as offering possibilities and represents an opportunity for doing so.

Social protection (SP) is a policy field in which a number of opportunities exist for mainstreaming. The World Bank identified this field way back in 1990 as lying at the centre-stage of development agendas (World Bank, 1990). More recently, Stern (2003:36) argues in the context of climate

change, that ‘all countries will need to adapt to a changing climate – for example through more resilient infrastructure, buildings, agriculture and enhanced social protection’.

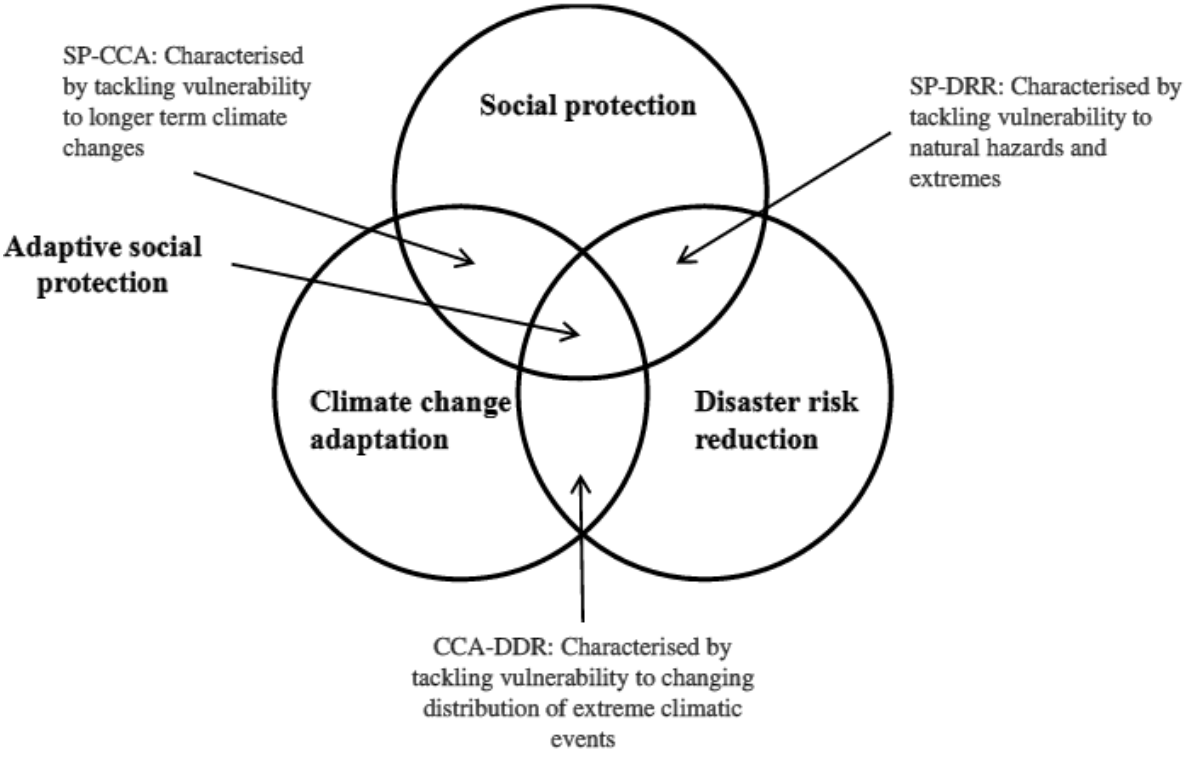
SP circumscribes an organised, institutionalised process of ameliorating vulnerability patterns, instituting lasting mechanisms to respond to shocks and, as an extension, promote social transformation (Gentilini, 2005). Devereux and Sabates-Wheeler (2004:9) define it succinctly as:

> all public and private initiatives that provide income and consumption transfers to the poor, protect the vulnerable against livelihood risks, and enhance the social status and rights of the marginalized, with the overall objective of reducing the economic and social vulnerability of poor, vulnerable and marginalized groups.

Design choices involve aspects of the policy or programme which are: spatial (asking where, or geographical questions), social (asking who, or which population group/s), or temporal (asking when, throughout the year or during certain periods). Instruments can involve cash or food transfers, insurance coverage, public works programmes and so forth. Targets are closely associated with the design and its instruments. Does the target aim at temporary recovery in the aftermath of disasters or at lasting upliftment of certain sections or communities? Are its impacts sectoral only, or do they go beyond that?

Davies et al. (2008a; 2008b; 2009) detail the linkages that exist under the umbrella of social protection, disaster risk reduction and climate adaptation. They argue that specifically in the agricultural sector, significant opportunities of exploiting co-benefits exist. In essence, a frame of ‘adaptive social protection’ is delimited to illustrate the cross linkages between responding to climate disturbances (adaptation), addressing vulnerability to hazards (disaster risk reduction) and helping to reduce vulnerability in the long run through social protection (Figure 3).

Figure 3. Linkages between social protection, disaster risk reduction and climate change adaptation



Source: Davies et al., 2013

For these linkages to come to fruition and be exploited, a long-term perspective approach is called for that includes the following aspects: findings from climate science; integrated research input from the social and natural sciences; a shift from seeing SP as a short-term coping instrument to a view of SP as understanding root causes of vulnerability and moving towards a rights-based approach to development; and the development of appropriate risk management tools that acknowledge these issues. In a follow-up to this research, Davies et al. (2013) examine adaptive social protection strategies in South Asia and show that comprehensive integration of these remain relatively limited but provide a platform that is open for significant opportunities. The MGNREGA is mentioned in passing as well, by highlighting its formal, 'transformative' role and 'potentially important impacts on the livelihoods of rural households' (Davies et al., 2013:44). Questions that this thesis explores in more detail through the respective papers.

Ideas related to the mainstreaming of climate change adaptation are becoming integrated into various sectors of the economy, ranging from education, health, agriculture to infrastructure (Kok and de Coninck, 2007). The sudden spread has been welcomed, but there also exists a sense of reservation (Tanner and Horn-Pathanothai, 2014). One of the main causes for disquiet relates to the question of whether mainstreamed programmes are not simply old, repackaged 'products' with new trendy labels (Preston et al., 2011). Lavell (2004) contends that suitable development planning subsumes adaptation concerns in any case and serves the common purpose of risk reduction. Also, it is not always easy to tease out the difference between business-as-usual scenarios and the climate thread imbued in them (Findlater, 2012). Experience in the field of gender mainstreaming of fostering empowerment of women does not set the most positive example, however, and it is doubtful whether instructive lessons were drawn. Rather the questions have also been posed on whether mainstreaming takes away the radical nature of the 'feminist' movement (Wittman, 2010).

Others have argued that resources meant for climate adaptation could be utilised in sectors and programmes for unintended purposes (Eakin, 2005). Questions with this background pertain to how sustainable and efficacious these policy interventions really are and ultimately can be (Eriksen et al., 2015). Do they challenge the status quo in development models (which are carbon-centric) or further entrench them? What ambitions do they pursue? Who benefits and who loses? How are the evaluations of climate benefits accomplished and which criteria were applied for study and evaluation? Pelling (2011:167) suggests looking beyond a programmatic approach to adaptation, viewing it as an opportunity 'to reconfigure the meaning and trajectory of development' that moves away from entrenched paradigms in carbon-centric development processes, and models their policies and a variety of problems rooted in them (such as inequality and environmental degradation).

The need to establish a position from which to view and evaluate decisions on adaptation has resulted in the development of principles, guidelines and criteria, notably by Eriksen et al. (2011), Eriksen and Marin (2015) and Adger et al. (2005). The principles proposed by Eriksen et al. (2011) for sustainable adaptation highlight the importance of political processes when considering questions on climate adaptation and argue that these processes are underplayed in development-as-usual scenarios. They argue that adaptation should acknowledge the presence of multiple

stressors in a given context, the existence of competing values and interests, different forms of knowledge which shape world views, empowerment of vulnerable population groups to influence development and climate outcomes and connections between local and global processes and their respective feedbacks. Actions taken outside these arenas are likely to prove a hurdle in achieving adaptation outcomes that prioritise outcomes of social equity, justice and environmental integrity. Adger et al. (2005), in more programmatic outlook on evaluation, propose criteria of effectiveness, efficiency, equity and legitimacy, which are applicable across scale (local, national and international) and need to be probed when adaptation measures are drawn up. In terms of effectiveness, questions revolve around assessments and understandings between intended targets and prospective outcomes. Given a choice among alternate adaptation options, how and what will they deliver? How is the dichotomy between individual action and collective outcomes assessed? What will be the short run or long run consequences of an adaptation action? For instance, the use of air conditioning appliances during heat waves might bring short-term relief, but it is energy intensive and thus obstructs efforts to reduce the emission of GHG. Secondly, efficiency considerations cannot be limited to just a quantification of costs and benefits. Distributional costs, the existence of non-market goods and temporally spaced capital investment play a role and should not be sidelined. Thirdly, equity in the form of outcomes, that is, who wins and loses in a certain space from adaptations. Lastly, the authors (2005) consider how acceptable a taken decision is among participants and non-participants (legitimacy) need to be accounted for. They sound a note of caution that there can be trade-offs between the criteria or they can become mutually exclusive, based on how economic development and climate scenarios pan out.

Both the principles and the criteria contain a wide range of theoretical work related to justice, equity or ecology. They are cross-scalar, temporally spaced and can be sectorally differentiated. Concrete, applicable methodologies that do justice to these are hard to come by and the demands on projects to include all of them can be daunting. However, they provide valuable qualitative pointers to stakeholders (policymakers/researchers/politicians) when adaptation policies are planned and undertaken.

Insights and inputs from vulnerability theory and its climate adaptation side, mainstreaming, social protection, and normative benchmarks for these form part of the theoretical and conceptual backbone of the thesis.

2.5 Modern Indian economic planning

Any discussion of today's Indian rural development domain cannot be divorced from a basic understanding of its modern economic planning history. In the early 1950s, development stratagems were heavily influenced by a Soviet-style centrally planned economy (Rudolph and Rudolph, 1987). This was mirrored by the adoption of a five-year planning model, emphasis on protectionism, the public sector and delegation of the central levers of economic planning, regulation and functioning to the state and its agents. Informed by ideas from modernisation theory[14], Keynesian theory[15] and the Feldman-Mahalanobis model[16], the aim was to set India on track for rapid industrialisation and modernisation to pull people out of poverty, improve the material standards of living and escape 'Malthusian clutches'.

The new industrial base was laid out to be a platform for surplus agricultural labour to be absorbed into urban centres of industrial prowess. Later on, specifically in the 1960s and 1970s, accentuation of the agricultural sector resulted in the creation and spread of institutions, paradigms and techniques that were pushed with heavy investments to increase productivity of the land (green revolution[17]) and 'free' marginally productive labourers for employment in other sectors (Rothermund, 2013). Within the political economy of these developments, other policy interventions in the rural realm were seen as secondary and dependent on resource mobilisation through industrial development outcomes (Rudolph and Rudolph, 1987). However, economic growth rates remained moderate and did not prove to be sufficient to absorb the large number of

[14] Modernisation theory proposes shifting a traditional society to a modern one through the dissemination of modern values and institutions (Haslam et al., 2009).

[15] Refers to macro-economic policy that emphasises the role of government, public investment and deficit spending to achieve economic stabilisation and growth (Snowdon and Vane, 2005).

[16] A neo-Marxist development approach that circumscribes the onus of investment to build up an industrial base for domestic consumption goods.

[17] Green revolution refers to agricultural reforms through the application and transfer of technology, development of institutions and research to raise agricultural output (Datt and Sundharam, 2013).

people who entered the workforce. Coupled with this, poverty rates remained stubbornly high at close to 50 per cent of the population (Datt and Sudaram, 2013). These circumstances had ramifications on political economic discourses and decision-making. The mid-1970s saw the emergence of a welfarist approach to development under the government of Indira Gandhi (Rudolph and Rudolph, 1987). Employment and relief programmes were incepted on a large scale in rural areas and as a policy instrument; PWPs proved especially popular instruments to extend lifelines to rural communities.

Nevertheless, a dominantly state-led approach to development was perceived to have limitations in the long run. In the absence of higher rates of economic growth, resources could not be mobilised in sufficient volume to tread a path of sustainable growth, employment creation or finance rural development initiatives. Tentative steps to liberalise the economy and elevate growth rates were taken under Rajiv Gandhi's government from 1985 onwards. The liberalisation process culminated in the introduction of the new economic reforms after 1991 (Rothermund, 2013). These adhered to neo-liberal paradigms of privatising, liberalising and opening up the economy in order to attract capital, promote entrepreneurship and reduce red tape to spur growth rates. The reform process recorded successes in that respect and brought about unprecedented economic growth in the following decade, with India emerging as one of the fastest growing major economies in the world (Rothermund, 2013). A growing private sector and market space was accompanied by a stagnant state and a declining share in social sector outlays (Dreze and Sen, 2002). These were the sequenced developments that characterised the decade following the reform movement. Poverty rates declined relatively and employment growth picked up but with emerging concerns regarding environmental health and social justice (Jha, 2008; Rothermund, 2013).

2.6 India's rurality today and emergence of the MGNREGA

India's rural population has remained sizeable and has not experienced a fundamental shift in the rural–urban population ratio over the past six decades. The first census after India gained independence was held in 1951, and put the ratio of people living in rural areas at 82.2 per cent of the total population (Dutt and Sundharam, 2013). By 2011, this proportion had reduced to 68.8 per cent, which translates in absolute numbers to 833 million people (NSSO, 2011). More than 60 per

cent of the rural workforce continued to be engaged in the primary sector, with agriculture and its allied sectors such as forestry and fishery accounting for the lion's share of employment (NSSO, 2011). Poverty rates have reduced, but remain at unreasonably high levels. Likewise, unemployment is chronically widespread (Shaw, 2013). The World Bank estimated a poverty rate of 33 per cent in 2010 (Olinto et al., 2013), based on a purchasing power parity of USD 1.25 per day. A more recent report by the Rangarajan Committee (GOI, 2014a) pegged the rural poverty rate at 31 per cent[18].

This makes India the country with the highest number of poor people in the world (UN, 2014). Effects of poverty are reflected in poor nutritional standards and health indicators, low life expectancy, chronic unemployment, limited ability to recover from shocks and heightened conflict potential. It is also a socially differentiated and spatially disparate phenomenon. In social terms, Scheduled Tribes[19], Scheduled Castes[20] , other backward castes and minorities suffer from deeply entrenched deprivation and discrimination that impede economic and social mobility, making them particularly vulnerable and susceptible to poverty (Viswanath, 2008). Among the states, some such as Chhattisgarh – which has a high share of Scheduled Tribe population – suffer from a very high incidence of poverty (45% in this particular state), while others exhibit lower poverty rates (6% in the state of Goa, for instance). Landless people and marginal farmers are also detrimentally affected. Other material stressors which entrench, exacerbate or affect rural development pertain to land and forest degradation, depletion of water resources, loss of biodiversity and overarchingly, to climate change (Singh, 2009). In combination, they create a complex, socially differentiated and spatially distributed pattern of vulnerability.

The reform process promised a new era of wealth and development, especially for India's vast rural population. While it can be argued that, for parts of the country this has come to be true, the stark reality of poverty, unemployment and inequality remains highly visible and cause for political and ideological unrest and contestation.

[18] Pegs the poverty line at Indian Rupee (INR) 32 for rural and INR 47 for urban areas on daily expenditure. (1 USD being equal to approximately INR 60)

[19] STs comprise 8.6 per cent and SCs 16.6 per cent of India's population (Census, 2011).

[20] Also referred to as *Dalit.*

General elections held in 2004 proved to be a watershed event for the reform process and its intrinsic promises. The ruling Bharatiya Janata Party campaigned on the 'shining India' campaign platform and was confident that the highest economic growth rates India has experienced since Independence would propel it to a decisive victory, but this did not materialise. Discontent of the rural population at being left out of the process was a major factor that fed the massive electoral victory of the opposition Congress party (Kochanek and Hardgrave, 2007). In parallel to the welfare approach of the 1970s, the newly elected United Progressive Alliance coalition government promised to redress these issues. A central plank of this promise was the mobilisation of resources for the social sector guided by the *aam admi* (common people) slogan – while at the same time pursuing the neo-liberal reform process. One of the flagship social sector programmes subsequently delivered[21] was the MGNREGA.

2.7 MGNREGA

The MGNREGA was passed as an Act towards the end of 2005 (NREGA, 2005) and subsequently became the central focus in India's SP agenda. In the words of the Act, it seeks to:

> provide for the enhancement of livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work and for matters connected therewith or incidental thereto (NREGA, 2005:1).

Unemployment, poverty and natural resource base degradation are the three main domains that it aims to tackle on a comprehensive basis across the country.

The use of PWPs in public policy has a long history (Subbarao, 1997). In developed countries, they primarily perform a macroeconomic stabilisation role. Closely related to Keynesian economic theory, they were prominently instituted at the time of the Great Depression of the 1930s (and more recently after the financial meltdown in 2009) to provide employment, create assets and lift aggregate demand. In developing countries on the other hand, they pre-eminently assume the form

[21] Under the Common Minimum Programme formulated, the left parties played an instrumental role in pressurising the government to pass the NREGA in its present form (The Hindu, 2009a).

of social safety nets – while retaining elements of its macroeconomic stabilisation function (Subbarao, 1997). A social safety net approach falls into the SP category and seeks to provide poorer households with an avenue for sustenance through state-supported employment provision, income or food, and ideally results in the creation of productive assets. Some programmes also seek to enhance employability through skill development. The central idea though is to counteract impacts of lean seasons in the agriculture sector, general economic slowdown and provide support after hazard impacts such as droughts, storms or floods in the form of cash payments, food handouts or other asset transfer. The World Bank defines this approach as 'forms of income insurance to help people through short-term stress and calamities' (World Bank, 1990:90). In this sense, from a traditional perspective, the ambition is comparatively limited.

India started introducing programmes of this nature on a large scale from the 1960s/70s (Rudolph and Rudolph, 1987). These were initially instituted under the *gharibi hatao* (abolish poverty) slogan of the prevailing Indira Gandhi-led government. A slew of them have been launched ever since. Some of the major ones are the Drought Prone Areas Programme, Rajasthan Antyodhya Programme, Integrated Rural Development Programme, Food for Work Programme, Jawahar Rozgar Yojana, Swarjayanti Gram Swarozgar Yojana and Maharashtra's Employment Guarantee Scheme.

Overall, only moderate benefits were recorded. All the same, these programmes helped provide immediate relief by helping to secure basic entitlements and ameliorated some of the worst symptoms of poverty (Dreze and Sen, 1989; Singh, 2009; Datt and Sundaram, 2013). Creation of sustainable livelihoods and other lasting achievements were seldom documented and were sometimes not even within the ambit of programme goals. Widespread corruption, lack of accountability and governance issues dodged implementation and delivery (Datt and Sundharam, 2013). In 1989, Rajiv Gandhi expressed his frustration at the inefficiency of public programme delivery, stating that 'of every rupee spent by the government, only 17 paise reached the intended beneficiary' (The Hindu, 2009b). Criticism was also directed at simplistic notions of poverty and its dynamics in programme designs (Gentilini, 2005). From a macro-economic point of view, it has been argued that PWPs, and by extension their welfare components, are a misallocation of resources, stoke inflationary pressures and foster a culture of corruption and entitlement (Pai, 2008,

Clayton and Pontusson, 2008; Choudhary, 2011). Standing apart from other programmes is the regional Maharashtra Employment Guarantee Scheme (EGS). Its relative success in providing transfer payments (from urban to rural), rights-based design, provision of income stability during times of distress and promoting female participation, has received distinct attention and has been well documented (Scandizzo, Gaiha and Imai, 2009; Shah and Mehta, 2006; Gaiha, 2002).

The MGNREGA is the latest entrant to this long list of national level PWPs and takes cues from its forerunners. Officially, it promises to do things differently and to incorporate lessons from past experiences (MoRD, 2013a; 2013b). Its objective is to move beyond being just another wage–employment programme and relief measure, to become more akin to a tool for social transformation[22] and promotion of sustainable livelihoods (MoRD, 2013b). These intentions are visible in the Act's wording and are reflected in design, mechanism and resource allocation. In this context, as Dreze and Sen (1989) note, universal, non-discriminatory support to entitlements constitutes one of the most efficient means of public action to improve access to basic goods and services – one of the core aims of the MGNREGA expressed through its provisions.

Inputs on the MGNREGA were taken from a wide set of actors, including civil society activists, politicians, academics and bureaucrats (Shah, 2007). Dreze and Sen (2013) summarise the implicit and explicit ambitions as encompassing an opportunity for rural re-organisation, justiciable rights, new principles and standards for rural governance and an avenue for empowerment of vulnerable population sections.

The Act was implemented over three phases from 2006 to 2008 and has been in operation ever since. One of the central features that captures its broader ambitions is its rights-based approach to employment. The scheme works through the existing three-tier Panchayati Raj Institutions[23] system and seeks to strengthen democratic, decentralised structures. Since the time of its inception, it has undergone numerous changes, which are incorporated in the summary below.

[22] It is for this reason that the MGNREGA is referred to as a scheme – not just a programme.

[23] Indian governance system wherein the lowest tiers in the system make up the administrative units. It gained constitutional status in 1993 and is composed of village, block and district units (gram panchayat, block panchayat and district panchayat).

The central design features, entitlements and mechanisms are as follows (NREGA 2005, MoRD, 2013a):

1. **Employment**

   At least 100 days of paid ('unskilled') employment are guaranteed to every rural household that demands it. Employment entitlement can be shared among the adult members of the household. Each of the participating household members receives a job card with details of the person and work days. From the date of application, the applicant is entitled to start work within 15 days. In case employment is not provided, the applicant is entitled to receive unemployment allowance for each day of missed work plus interest.

   Wage rates vary from state to state and are based on the Minimum Wages Act, 1948. They are decided in consultation with central and state employment guarantee councils. Daily wage rates can vary based on the daily amount of physical labour exerted; that is, they are linked to the quantity of work delivered and an officially calculated schedule of rates. Over the years, modifications were introduced to permit the local administration, and backward areas in particular, to provide employment for up to 150 days. This applies so far to tribal areas and Scheduled Tribe communities. All wage payments are ideally disbursed through bank accounts (nationalised banks, post office savings banks) which can be opened when entering the scheme.

2. **Asset creation**

   Labour power is mandated to be harnessed and directed towards the creation of productive assets. Priorities lie on works related to natural resource management, individual asset creation for vulnerable sections, public infrastructure and work for self-help groups in the agricultural sector. These include water conservation, watershed management works, irrigation canals, renovation of traditional water bodies and afforestation activities. For categorised vulnerable people, activities linked to improving productivity of works, development of fallow and wastelands, house construction, agriculture extension activities such as horticulture and sericulture, promotion of livestock holding and promotion of fisheries are allowed. Public works can include rural sanitation, road connectivity,

construction of playing fields, disaster preparedness or restoration activities, construction of public association buildings, food grain storage structures and maintenance of rural public assets. No contractors are allowed to perform these works and the material component is not allowed to exceed 40 per cent of the total cost. All worksites need to provide basic facilities such as drinking water, an information board on work details, crèche and first aid box.

3. Special provisions

Weaker sections of society are eligible for special provisions and exemptions from general guidelines in work allocation (such as payment for land preparation at the time of cultivation) and asset creation. These include a recommended minimum 33 per cent participation rate for women. Also, asset construction activities and extended labour activities are permitted on lands and households for people falling below the poverty line, SC/ST communities, physically handicapped and beneficiaries of other applicable welfare schemes such as the Indira Awais Yojana, (also known as the 'million wells' scheme), National Rural Livelihood Mission or other state-sanctioned programmes. Marginal and small farmers are also allowed to utilise MGNREGA for land development activities. As indicated, the MGNREGA ideally utilises and exploits opportunities for convergence presented by other schemes that function in rural areas of India.

4. Checks and balances

Transparency is one of the Act's key characteristics to ensure smooth functioning and reduce corruption. All documents, accounts and information related to the MGNREGA are publicly available for scrutiny. This includes dissemination of information through the official website, at government offices and at worksites. Work-related matters including beneficiary and work selection are discussed in open fora, specifically at grama sabha meetings (plenary village assemblies who are the final authority on approving works). Civil society organisations are encouraged to spread awareness of the schemes' entitlements and ensure that provisions of the Act are fulfilled. Social audits play a key part in this process. They should be held at least every six months by local community members to scrutinise expenditures, review intended outcomes and ensure that follow-up action is taken in case

of discrepancies. An ombudsman at the district level, together with special officers, are assigned to receive and process complaints within a fixed period of time. Penalisation clauses include fines for officers and can extend to imprisonment.

5. **Financing**

   Financing of the scheme is shared between central and state governments. The central government covers the entire unskilled labour wage component. It also bears 75 per cent of the cost for skilled and semi-skilled employees and material besides administrative expenses of the central offices. The state government needs to pay for unemployment allowance, 25 per cent of the semi-skilled and skilled and material cost as well as for the state employment guarantee council.

6. **Governance**

   The MGNREGA utilises and aims to strengthen existing line departments and the Panchayati Raj Institutions. The scheme is centrally implemented, designed and monitored but its administrative functioning percolates through the vertical structures of states, districts, blocks and ultimately to the panchayat level. It is the panchayat level which is the nodal agency for planning and execution of works. Here, preliminary labour budgets and work shelves (contain work proposals that can be utilised to meet labour demand) are collated and prepared. Grama sabhas (village assemblies) are a key decision making authority within the Gram panchayats. Each level ideally locks into the next larger unit (from panchayat to state) to create integrated development planning. Longer terms should be prepared and collated into district perspective plans. Each tier has a degree of discretion in designing and implementing specific development initiatives that are deemed necessary, based on the requirements and conditions of respective development units. For example, an arid state like Rajasthan might choose to prioritise afforestation and water conservation, while other states such as Jharkhand could prioritise the creation of other rural infrastructure.

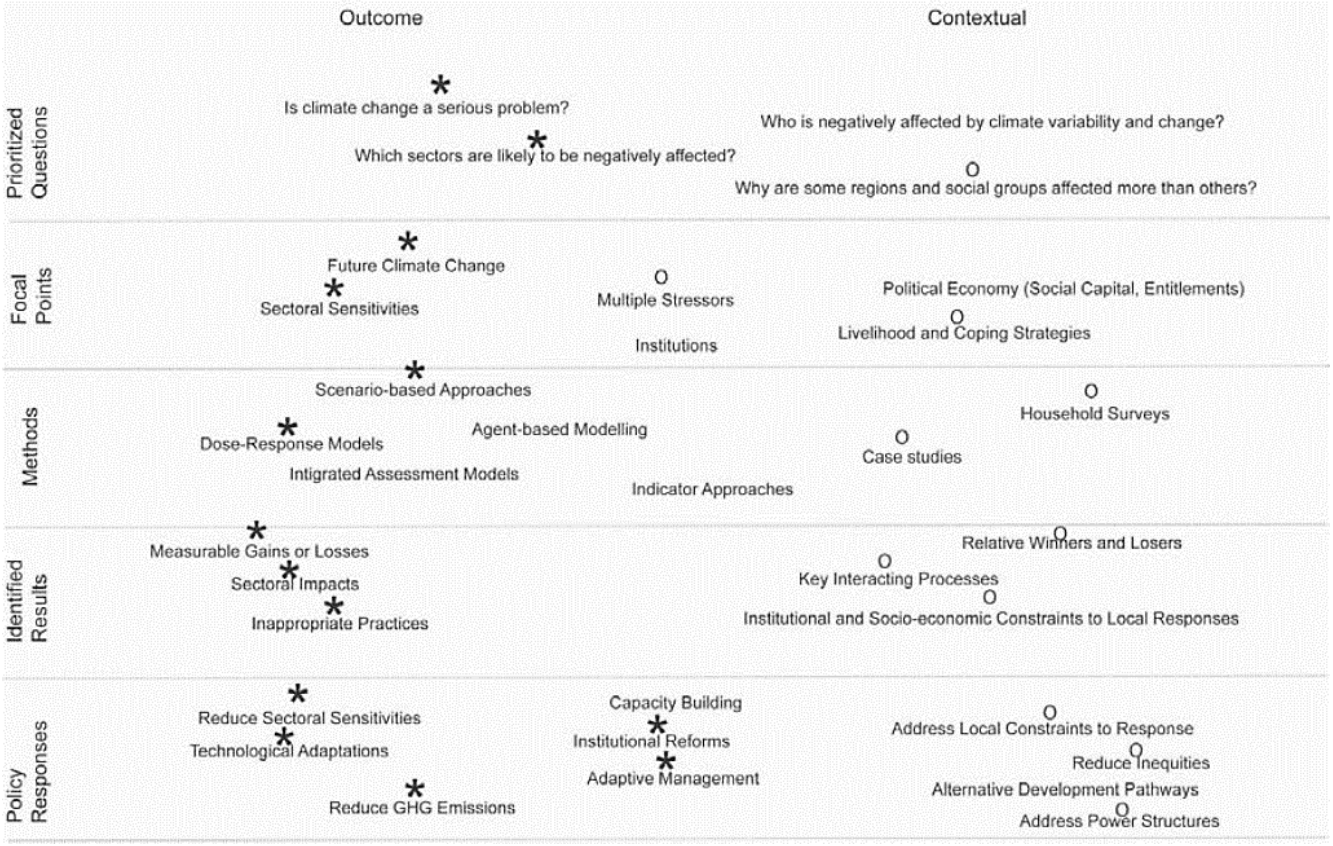
Given the grand size and ambition of the scheme, it has attracted much research interest. Proponents and critics have highlighted and drawn on often ideologically motivated research

studies to carry forward their points. For more details, see Paper 1, which reviews a number of existing research studies in this context, including those on the tentatively covered climate vulnerability aspects.

3 Research Framework

The broad thematic area of the thesis and its specific research objectives subsume a range of theoretical and conceptual perspectives as well as interpretations – as elucidated in section 2. Invariably, to generate relevant knowledge and be able to operationalise research, a number of choices need to be taken. This section provides a brief elaboration of the applied research framework, which structures the thesis and its individual papers. A more detailed summary of them will be presented in section 5. The research undertaken falls within the broad realm of a political economy perspective, which refers to an interdisciplinary field that studies the relationship between processes, structures and outcomes at the interphase between economic and political domains. Issues of social re-production of societal structures, relations of power, poverty and livelihoods, environment–development relationship and the orientation and efficacy of different modes of economic organisation are subsumed under the contextual vulnerability perspective, as illustrated on the right-hand side of Figure 4. Vulnerability in this process is viewed as a dynamic form of interaction between biophysical and social processes, which create a vulnerability context. Risk causality is traced to social, political, economic and cultural factors that are influenced and can be mediated by geographic location and ecological conditions. Under these circumstances, it is not purely concerned with adaptation in the sense of the IPCC definition, which essentially deals with adjustments to climate change. The scheme under study is viewed as a deliberate form of adaptation that forms part of broader public action, instituted by the state and its agencies. Literature review, case study and multiple data methods inform it to generate data on the scheme's manifested effects and development relevance in an adaptation context at different scales. A tribal development block was chosen as a field study area, for it is illustrative of the scheme's developmental and adaptation effects in a sphere that hosts one of the most vulnerable and marginalised population sections in rural India.

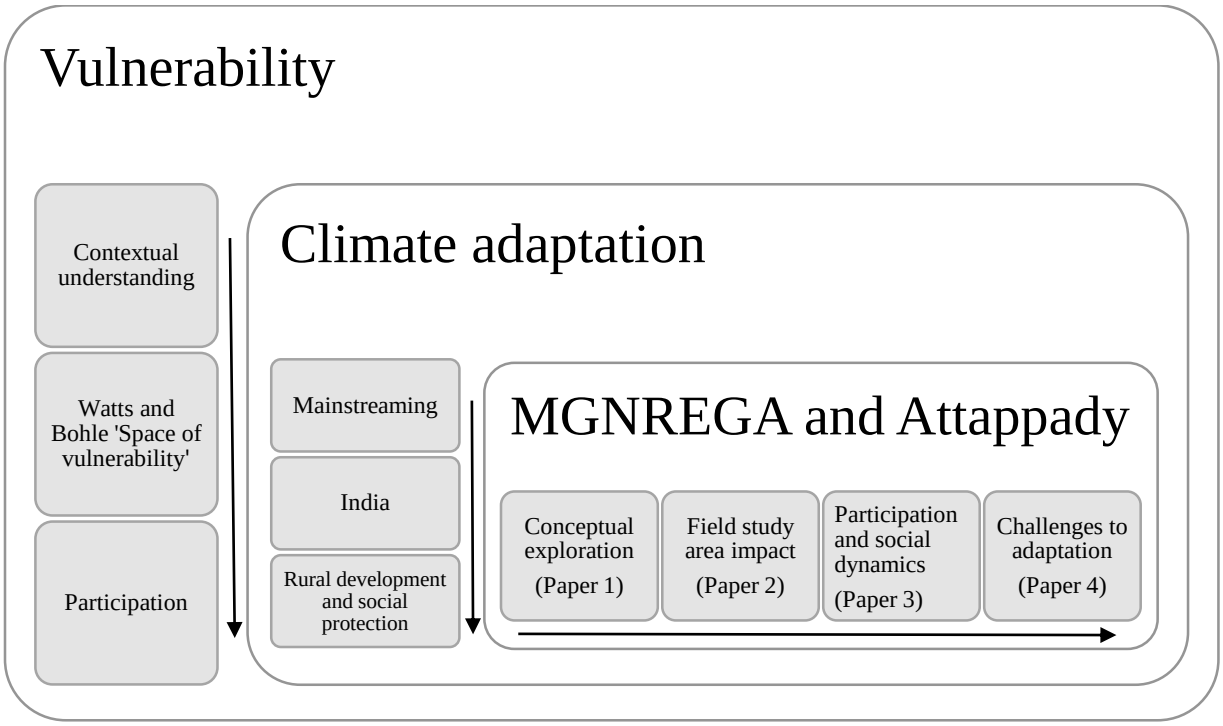
Figure 4. Two contrasting interpretations of vulnerability



Source: O'Brien et al., 2007

This is the starting point for detailed research on the mainstreaming of the MGNGREGA in India and its empirical research components from the case study area.

Figure 5. Framework for study illustrating the nested approach to the study

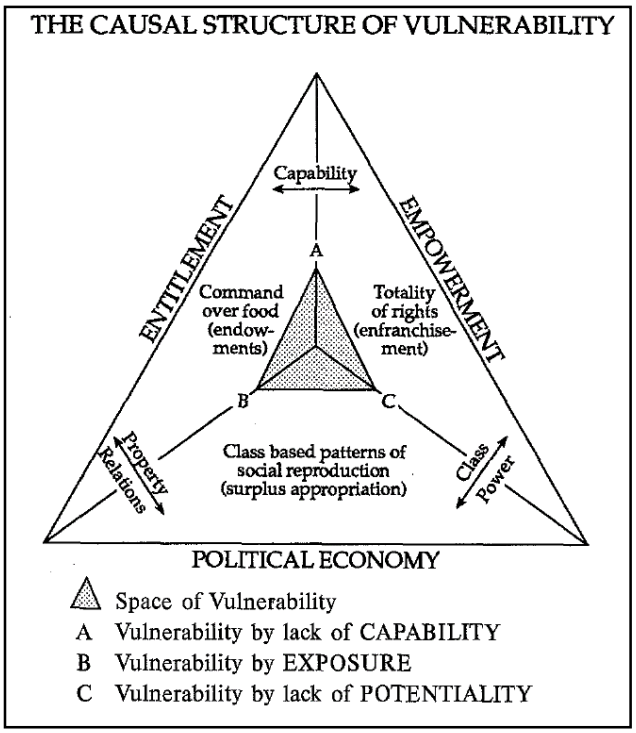


Source: Author's illustration

Paper 1 conceptualises the MGNREGA and its climate role with respect to normative benchmarks that inform adaptation and mainstreamed policy instruments. It relies on a secondary data analysis and employs aspects of a contextual vulnerability lens to understand and examine climate and development issues in India.

Paper 2 proceeds to an empirical analysis of the MGNREGA's impacts in Attappady and employs an integrative 'space of vulnerability' framing of Watts and Bohle (1993a,b) as a reference point. The framing's utility in examining the causality of vulnerability, including to climate change has been well documented (Ribot, 1995).

Figure 6. Causal structure of vulnerability



Source: Watts and Bohle (1993b)

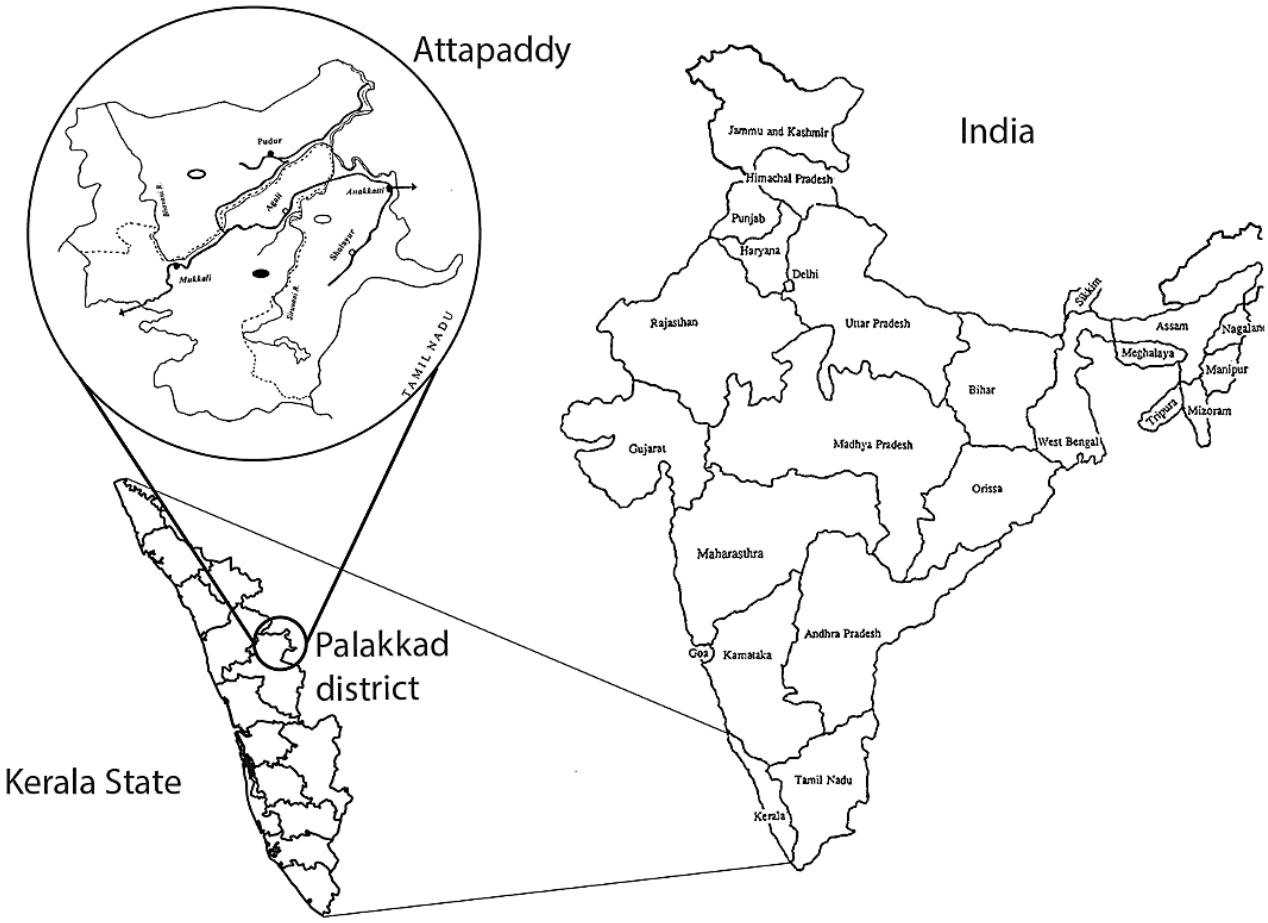
The framing is composed of a broad, eclectic superstructure of theories that incorporate issues of empowerment (enfranchisement, marginalisation), political economy (class-relations, ecological crisis) and entitlement (rights, endowments and capabilities), located in a given spatial unit and its geographic and ecological characteristics. For instance, natural hazards can impact the material endowments (entitlement), which are amplified by conditions of marginalisation (empowerment) that can be found and interacts with historical conditions of surplus production and gives rise to vulnerability. This frame is supplemented by inputs from social protection, adaptation thinking and paradigms that inform them.

Paper 3 constructs a framework that examines issues of worksite participation and social dynamics of the MGNREGA in Attappady. It picks up on and expands on some issues touched upon in Paper 2, such as group dynamics at worksites and explores them in more detail. From a worksite participation lens, it goes on to examine the MGNREGA's governance and empowerment effects on vulnerable population sections in the case study area. Issues of power, inclusiveness and responsiveness of institutional processes and wider development outcomes are discussed therein.

Paper 4 explores key adaptation trajectories and challenges in the Block. The paper draws on inputs from livelihoods, adaptation and vulnerability thinking to explore these trajectories and challenges. In doing so, it focuses on social and cultural aspects.

4 Field study area

Figure 6. Map of Attappady



Source: Modified from Velluva, 1999

4.1 Kerala state

Kerala state was formed in 1956, is located in the south-west of India and is perched in-between the Arabian Sea to the west and the Western Ghats mountain range to the east. On its eastern and north-eastern side, it borders Tamil Nadu and Karnataka state. It has about 33 million people spread over a landmass of 38,863 square kilometres, making it one of the most densely populated areas in the country. Administratively, it is divided into 16 district units. STs make up 1.5 per cent

of the population and SCs account for nine per cent. Economically, the tertiary sector contributes the lion's share of the state domestic product but agriculture remains the single most important source of employment, with nearly half of the population dependent on it directly or indirectly. Horticulture (spices, tea, coffee, rubber and banana) and the fisheries sector are of particular economic significance. In addition, rice, coconut, pulses and tapioca are among the mainstays of the sector. Kerala's social development indicators reflect those of other economies at a more advanced stage of development. Its official literacy rate is pegged at 94 per cent; it has a positive female sex ratio (1,084), high life expectancy (74 years), low child and maternal mortality rate and comparatively less poverty (11.3%) than other states (GOI, 2014a). Combined with a low per capita income, these indicators have contributed to describe the state's development characteristics as the 'Kerala model'. However, contradictions persist in different realms and geographies. Marginalised sections, especially the tribal community, have been largely excluded from Kerala's social progress (Kurien, 1995). Other socio-economic problems are the high rate of unemployment, outmigration of qualified workforce, social problems such as alcoholism and environmental pollution (Gomathy, 2012, Prakash, 1999).

4.2 A new paradigm of governance - decentralisation in Kerala

In 1993, the 73rd constitutional amendment became a landmark decision to foster decentralisation and empowerment of local governments in rural India. The amendment granted more powers to involve people in decision-making and autonomy to representative institutions of the state. It was left to individual states in the Indian federation to decide on the structure of local bodies and processes of people's involvement. Kerala state's efforts to decentralise and devolve powers have been described as the most comprehensive in India (Heller, Harilal and Chaudhuri, 2002). The so-called 'People's Campaign for Decentralised Planning' was launched by the then ruling CPI-M party (Communist Party of India-Marxist) in 1996 and covers 1,214 local governments in Kerala. Schematically, the decentralisation process in Kerala looks as follows: grama sabhas (village assemblies), which are open for everyone to attend and are publicly announced, are held at the ward level (a gram panchayat has approximately 10 ward units) to discuss development priorities, select beneficiaries and problematise local development issues. Tentative but comprehensive sub-development plans are drawn up and flow into development seminars where they are concretised. Development seminars host key officials, political leaders and technical resource persons (from

within the panchayat or outside). Task forces are formed to convert the initial planning document into final panchayat plans that frame and budget the suggestions with respect to development sectors (such as tribal development, forestry, agriculture).

Experiences of the facilitation of political and social processes of the People's Campaign have received largely positive feedback. Mass mobilisation efforts at the grass roots level (which have a long history in Kerala), increased participation of citizens, devolution of fiscal and real authoritative decision-making powers extended to the local bodies and citizenry have been described as taking on a model role in India and beyond (Heller, Harilal and Chaudhuri, 2002; Isaac and Franke, 2002; World Bank, 2000). The extent to which the campaign actually continues empower people, however, remains subject to debate. Some authors, such as Kjosavik and Shanguaratnam (2006), question whether the radical premises of governance reforms can be sustained in an age of neo-liberalisation. They argue that gains are under threat from 'neo-liberal prescriptions' (particularly following reforms by the Congress-led government in Kerala in 2001) and have been reversed through excessive bureaucratic interventions, which threaten powers extended to local bodies and involvement of mass organisations.

Kerala's poverty alleviation programme is integrally linked to local governance institutions. The central, community-based organisation, both in urban and rural areas, is the Kudumbashree mission. Since its launch in 1998, it has grown exponentially and involved more than 3.6 million families in 2008 (John, 2009). It is a female-centric self-initiative group, supported by state officers and most governmental anti-poverty initiatives are routed through it (including central schemes). It plays a key role in the execution of the MGNREGA as well.

Kudumbashree units are composed of poor women who form groups that are engaged in activities that range from financial operations, agricultural operations, waste management, marketing of self-produce to the everyday involvement in the governance of local institutions (Kudumbashree, 2014). They are organised in a three-tier system composed of neighbourhood groups (NHG), area development societies (ADS) and community development societies (CDS) that federate into each other, with the CDS lying at the top level. Beyond the CDS, it is the state administration that directs, guides and provides funds to the mission.

4.3 MGNREGA in Kerala

The MGNREGA was first introduced in the backward district of Wayanad and Kerala's agricultural heartland district of Palakkad in 2006. By 2008, all of Kerala's districts were covered by the scheme. Some of its special features in Kerala are that road connectivity works are limited to 10 per cent of the total expenditure of works. Government, retired and senior engineers form part of technical committees which design and approve works, eco-restoration works are assigned a preferential role for example through work on degraded forest lands, Kudumbashree units form the nodal agency of 'first contact' with participants and that decentralised institutions and associated civil society organisations are accorded a central role in the schemes implementation.
Its introduction was accompanied with a healthy amount of scepticism. Kerala's special development characteristics put question marks on whether there would be significant demand for employment or much utility in the scheme. Kerala's higher wage regime, comparatively less poverty and smaller agricultural sector, relatively to that of other states, posed question marks. On the other hand, experiences on its implementation tell a different tale. During the financial year 2013-14, Kerala recorded the highest female participation rate from amongst all the states at 93 per cent and in its average days of employment generated over the financial year stand at 40 days, higher than the national average of 35 days and 1.3 million households being provided with work (MoRD, 2014). The demand for employment can be taken as an indicator that even in a state like Kerala, demand for social support schemes remains significant. A reduction in the number of farmer suicides in Wayanad was associated with the introduction of the MGNREGA (Radhakrishnan, 2008). Palakkad district was selected as one of the best performing administrative units in India (NREGA, 2008). Similarly 'good' quality asset construction and participation was observed in many panchayats (Chathukulam and Gireesan, 2007). The most highlighted aspect as already mentioned, lies in the high female participation rate and the empowerment of women, which is largely attributed to the functioning of the Kudumbashree units (Sudarshan et al., 2010) and also discussed in paper 2. Some commentators go on to highlight the positive livelihood impacts and convergence with other schemes in the working of the MGNREGA in Kerala (Khera, 2012).

As much as there exist positive experiences, shortcomings have been documented as well with complaints about farm labour shortages on account of MGNREGA works (Prabhakaran, 2008),

also in contrast to earlier experiences, suicides were attributed to a delay in wage payments in Wayanad (Pai, 2013). More than 60 per cent of the asset works in the districts were judged 'unsatisfactory or irrelevant' by the Comptroller and Audit General (The Hindu, 2010). Reasons for discrepancy in research findings can possibly be found in the different methodologies applied, quality of data as well as contextual conditions and variability in administrative performance.

4.4 Attappady – land, people and economy

Attappady is located between 10° 55′ N and 11° 15′ N Latitude and 76° 21′ E and 76° 48′ E Longitude in Palakkad district and nestled in the Western Ghats mountain range. Kerala state's Malappuram district borders the north-west, and Tamil Nadu's Coimbatore district and Nilgiris district to the east and north-west respectively. It is accessible by road from Coimbatore and Mannarkad (Kerala). The plateau lies north of the Palakkad gap at the south-western base of the Nilgiris. The following section gives insights on its land and people.

4.4.1 The land

Attappady is located along an east sloping plateau and forms part of the Nilgiris hill range and biosphere reserve. It covers an area of 745 square kilometres and boasts a range of diverse topographical, climatic and ecological features (Muraleedharan et al., 1991; Sathis, 1989). Interspersed hills, valleys and high mountain ranges form an undulating terrain. Average elevation lies at about 900 metres above mean sea level, its lowest points descending to about 550 metres along its western flank and at its highest points ascending to more than 2,200 metres in its north-western flank. Approximately 51 per cent of the terrain has an elevation between 600 to 1,000 metres. It is in these areas, around the centre of the plateau, that most of the settled population resides. Steep slopes (71% in the range of 15 to 30 degrees) contribute to making the area environmentally sensitive. Rainfall patterns are closely connected to the topographical diversity of the terrain and range between 700 to more than 3,000 millimetres annually (Radhakrishnan, 2012). The eastern parts of the Block usually receive the retreat monsoon, lie in parts in a rain shadow area and receive significantly less rainfall compared to the western parts. Approximately 46 per

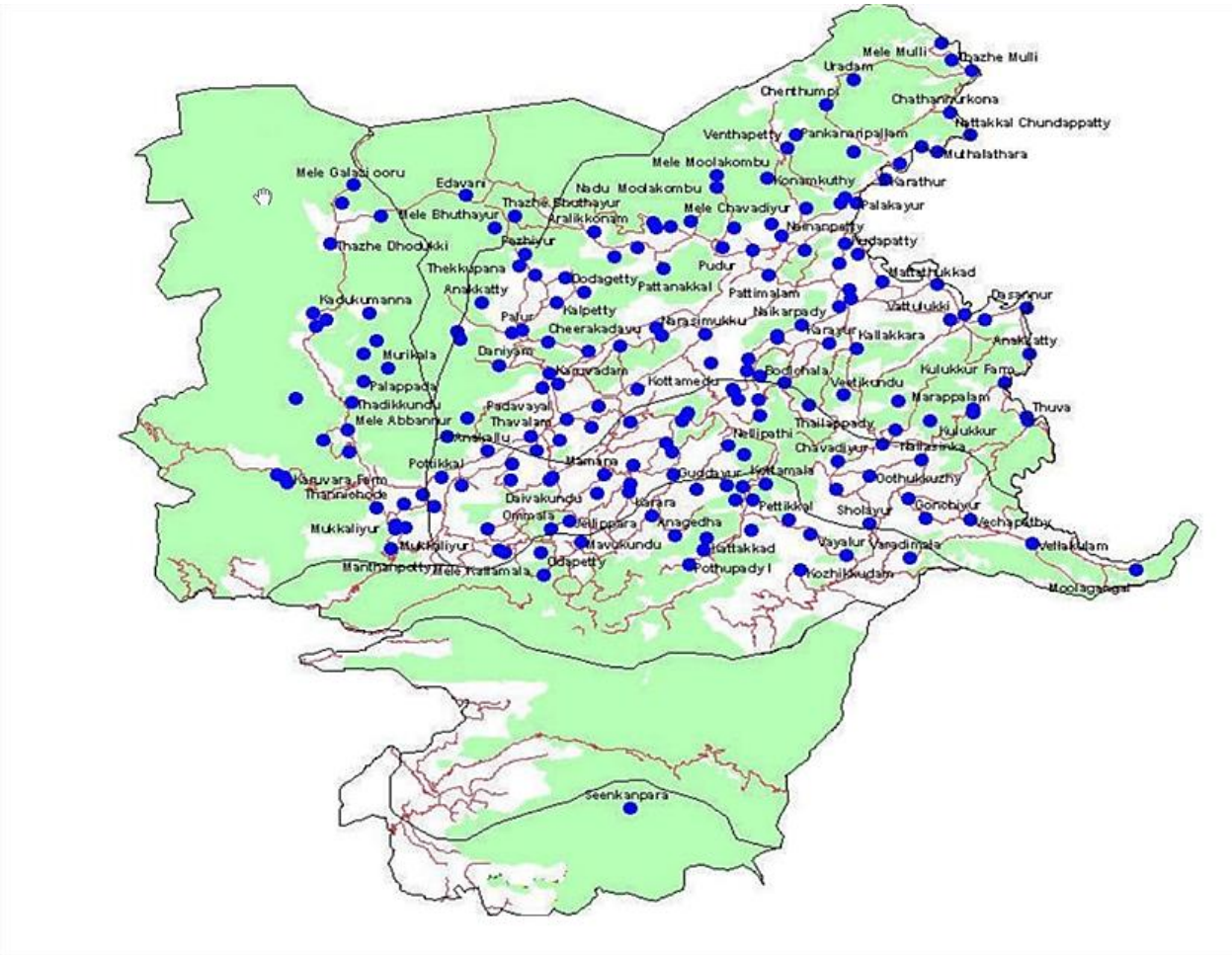
cent of the geographical area experiences approximately 2,000 millimetres of rain (Muraleedharan et al., 1991).

The most important river is the Bhavani. It is a tributary of the Cauvery river and snakes across the valley, draining it from west to east. A number of tributaries join it along the way. The other two important rivers are Siruvani and Kundah. The Siruvani drains the southern high plateau and flows north-east where it joins the Bhavani. Similiarly, the Kundah drains the south-western edges of the Nilgiris and joins the Bhavani further on. All three rivers are important sources of water for drinking and for irrigation, but have started turning dry more frequently on account of climatic changes and development pressures (Shaji, 2015).

Essentially the plateau used to exhibit tropical climatic conditions interspersed by cooler, moist conditions along the higher hill ranges and more arid and hot areas along its central basin. The period between November to December is cool and relatively dry, and the period between March and May is the dry season with high temperatures. In total there are five agro-climatic zones which are not clearly demarcated. In terms of land use, approximately 400 square kilometres are classified as forest lands of various types (the largest part of which is deciduous open forest), 164 kilometres for agricultural use[24] and 179 kilometres which is 'degraded land' (University of Kerala, 2007).

[24] Assessments which differ, other studies putting the amount of actual, usable agricultural land much lower (see Kumar et al, 2012).

Figure 7. Settlements and forest areas of Attappady



Source: Radhakrishnan, 2012

4.4.2 People and economy

Attapaddy's case provides a stark contrast to the general development experience that otherwise distinguishes Kerala. It was formed as a tribal development block in 1962 on account of the distinctive socio-economic conditions that characterise its tribal life and economy. It has the second highest concentration of tribal communities in Kerala. In 1975, it was upgraded to an integrated tribal development block. The motivation behind designating it as this special administrative unit by the government was to mobilise resources, institute community welfare schemes and coordinate activities adapted to the specific circumstances. A total of 69,723 people live in the three panchayats (Agali, Sholayur and Pudur) that form the Block, as detailed in Table

1 below. Agali village is the local administration's headquarters. Malayalam is the main language spoken, with variations of Tamil and Kannada also existing.

At the time of the Block's creation, tribal communities constituted the majority of the resident population but over the years, rapid demographic changes precipitated by the in-migration of settlers changed the population profile. From an outright majority, the resident population was reduced to a minority with attendant changes in the political economy and ecology of Attappady.

Table 1. Population profile of different panchayats

Panchayat	Total population	Area	Literacy rate
Agali	32,738 (22 wards)	262 km	69.5%
Pudur	12,354 (13 wards)	413 km	39 %
Sholayur	16,941 (14 wards)	150 km	48.5 %

Source: GOI, 2001

Three distinct tribal societies reside in Attappady, namely the Irula (77 %), Muduga (13%) and Kurumba (10%) (AHADS, 2010). The Irula majority are found in all three panchayats but are concentrated in Agali and especially Sholayur. Muduga and Kurumba can be found predominately in Agali and Pudur panchayats. In total, 187 *ooru* (hamlets) are spread across the plateau. Most of them are in close proximity to rivers and rivulets at moderate elevation. Of the tribes, the Kurumba are the most 'primitive'; they live in the most remote parts of the high ranges and practice slash-and-burn shifting cultivation, as well as food gathering in the forests. The Irula have turned to subsistence agriculture over the past century and traditionally cultivate millets such as *cholam* (maise), *ragi* (French millet), *chama* (little millet), oilseeds and pulses. Muduga follow similar agricultural practices, although are otherwise more closely related to the Kurumba (Menon, 1996; GOK, 1976). In recent times they have adopted commercial agricultural practices followed by the Malayali[25] and Tamil settler communities. Overall there has been growing assimilation and a blurring of practices amongst the tribal communities and also between the settler community – as evidenced by converging of agricultural practices (Velluva, 1999). Malayalam is the dominant language spoken in Attappady with dialects including variations of Tamil and Kannada found as well.

[25] 'Malayali' is a term used to describe Malayalam-speaking people from Kerala.

Agriculture forms the mainstay of economic activity, with only marginal activities in other sectors. Important crops that dominate agricultural land use and activity are fruits (banana, other plantain varieties, mango), spices and condiments (pepper, cardamom, arecanut, ginger, tamarind, vanilla), tubers, vegetables, coconut, plantation crops (tea, coffee, rubber) and to some extent paddy – apart from traditional tribal crops. Most of the recent growth in acreage can be observed with banana and plantain cultivation (GOK, 2011). Employment patterns of main workers (more than six months of employment) from the three main villages (Agali, Sholayur and Pudur) exhibited following pattern: 17 per cent were cultivators, 40 per cent agricultural labours, two per cent were engaged in household industries, and the remainder were in mixed professions or casual labour (Census, 2011). In tribal households (Takaki, 2012), wage labour (35%) constituted the main source of income, followed by wage labour in agriculture (34%) and self-employed agriculture (18%).

Table 2. Employment patterns among the three main villages in Attappady[26]

Panchayat / Status	Pudur	Sholayur	Agali	Total
Literates	3,111	15,962	4,493	**23,566**
Illiterate	2,915	6,395	2,519	**11,829**
Total worker	2,862	10,704	3,777	**17,343**
Main worker	2,299	7,330	2,847	**12,476**
Main worker – cultivator	465	1,188	449	**2,102**
Main worker – agricultural labourer	1,108	2,612	1,213	**4,933**
Main worker – household industries	16	169	123	**308**
Main worker – other	710	3,361	1,062	**5,133**

Source: Census, 2011

4.5 Socio-ecological change from a historical perspective

As indicated, Attappady has undergone rapid changes over the years which have affected the social and cultural integrity of its tribal societies, brought about changes in economic constitution, political and social power dynamics as well as affected ecology and climate. In the 18th and 19th

[26] The data represents the sample drawn from the Census enumeration in 2011.

centuries, Attappady was an isolated tract of land under the control of the Zamorin[27] of Kozhikode. Only the tribal communities inhabited it and pursued self-sustaining livelihoods essentially undisturbed (Kunhaman, 1981;Sathis, 1989). Dense forests, wild animals, inaccessible terrain, diseases and lack of communication and transportation infrastructure made the area inhospitable to outsiders. Progressively, the Zamorin gifted, sold or rented the land to sympathetic local Nair *jenmis* (chieftains). Initially, they only used it to capture elephants for ceremonial purposes and did not engage in other resource extraction. This changed when full property rights over the land were obtained, including the right to extract produce and rent. *Kariasthans* (managers) were engaged as land managers for this purpose, and they usually taxed the populace in the form of barter (honey or other forest produce). By the beginning of the 20th century, most of the tract was under the landlord's formal command and management. The first half of the 20th century saw an accelerating interest in Attappady and concomitant changing land relations (Joseph, 1991, Shankar and Muraledheeran, 1991; Velluva, 1999). The British colonial administration began declaring the north-western parts of Attappady as reserve forests; some landlords began to lease out lands; *kariasthans* sold undemarcated parcels off to pioneer settlers; plantations were set up and pressure on lands in the adjusting regions pushed people up the hills. These were the starting points that signalled dramatic changes for people and ecology of the area. The advent of World War II proved to be of major significance (Sathis, 1989). British demand for timber for ship-building and railway expansion made unexplored forest lands highly valuable. After the war ended, an emerging plywood industry forced additional demand on forest land. Labourers for timber and on plantations, in addition to a limited number of agricultural settlers, provided the manpower for these developments. Compared to the large-scale influx of people that followed, this remained a 'trickle'. In the 1950s, people from around Coimbatore (Tamilians) and Travancore (a region in south Kerala, predominantly Christian) started migrating in large numbers to Attappady and indiscriminately appropriated lands in the fertile midlands. The period 1961–1981 saw the non-tribal population jump by nearly 400 per cent.

[27] Royal title used to describe the ruling, Hindu rulers in the Malabar region of Kerala

Table 3. Demographic change 1951–2011

Year	Tribal population	Percentage of tribal population	Non-tribal population[28]	Percentage of non-tribal population	Total population
1951	10,200	90.92	1,100	9.68	11,300
1961	12,972	60.45	8,489	39.55	21,461
1971	16,536	42.21	22,647	57.79	39,183
1981	20,659	33.00	41,587	67.00	62,246
1991	28,711	46.28	33,322	53.72	62,033
2001	27,121	41.00	39,050	59.00	66,171
2011	30,460	44.00	39,263	56.00	69,723

Source: GOI, 2014(b)

Fostered by a conducive government policy, scarcity of land in the plains, poverty and the promise of opportunity, the concomitant decades saw non-tribal communities moving in and emerging as the dominant majority. At first, the Tamil people settled in the eastern parts of Attappady, followed by Malayalis in the western parts and more recently from the Malabar region. Land was either bought from erstwhile *jenmis*, allocated by the government, inherited, leased from absentee landlords, bought from tribal communities or simply encroached upon (Velluva, 1999). The Land Ceiling Act of 1963 passed by Kerala state, legalised settler landholdings and resulted in extensive appropriation of customary tribal land holdings. Changed land use practices were accompanied by large-scale deforestation (Sathis, 1989). Forests were cleared to open up land for cultivation, to be used as fuel wood or sold on the market. Farming practices were rarely adapted to the fragile mountainous ecosystem but rather were dictated by short-term market demands and agricultural practices carried by the settler community from the plains. Indiscriminate application of fertilisers and pesticides, in addition to deforestation and soil-exhaustive plant breeding varieties resulted in the virtual denudation of large tracts of the valley, which remains visible today. From an estimated 82 per cent forest coverage in 1959, this area was reduced to as little as 28 per cent by 1971 (Kunhaman, 1981). Nair (1988) notes that, apart from impacts in the agricultural sector, legal vacuums contributed to rapacious bursts of deforestation. One documented example is related to the Kerala Private forests (Vesting and Assignment) Act, 1971, which aimed to institutionalise the protection of forested areas on private land in Kerala. In anticipation of its passing, landlords with

[28] The SC population comprises only 4 % of the total population.

large tracts of forest lands attempted to maximize their revenue (from otherwise redundant income streams) by raiding remaining tree holdings on their property in a short span of time to take advantage of a window of opportunity before the Act's passing. Water flow from the Bhavani river suffered from siltation and was diverted for drinking water and irrigation purposes in and around Coimbatore, with attendant impacts on the hydrological cycle. Symptomatic of the degradation of the natural resource base were changed rainfall patterns, reduced vegetative cover, soil health and availability of formerly perennial water sources (Radhakrishnan, 2012; Sathis, 1989). In the words of Muraleedheeran et al. (1991:41), 'Attappady offers a typical example of unplanned human settlement in a forested area which has turned the 'green hell' to a 'red desert'.'

In totality, a matrix of development pressures, government policy, ecological degradation, loss of access to land and misguided government policy proved to be a bane for the tribal communities. They were pushed out of the most fertile land tracts into the upper hill reaches (which are partly under restrictive control of the government), became wage labourers on plantations and private farmsteads and started losing their agricultural livelihood base as a result of land alienation, ecological degradation and micro-climatic changes (Velluva, 1999; Haseena, 2006; Sathis, 1989; Kunhaman, 1981). Besides providing for economic subsistence, agriculture is closely interwoven into a moral economy that gives sanction, structure and meaning to tribal cultural and social institutions which have progressively eroded (Muraleedheeran et al., 1991; Haseena, 2006). Legislation passed to protect tribal exploitation and land alienation such as the Labour System (Abolition) Act, 1976 or The Kerala Scheduled Tribes (Restriction on Transfer of Lands and Restoration of Alienated Lands) Act, 1975[29], Tribal Land Amendment Act 1996[30] failed to significantly alter land ownership patterns (Suchitra, 2013).

In 1982, the last authoritative report on land alienation was issued. The report specifies that 63 per cent of tribal agricultural land was usurped (see D'Rozario, 2013) and up to 60 per cent of Attappady's lands were declared 'wastelands' (Takaki, 2012). Pauperisation is rife. Around 75 per cent of the tribal communities have been estimated to be under the below poverty line (KILA, 2008). Illiteracy and ill health are disproportionately high compared to other communities

[29] For more information see Prabhakaran (2014).
[30] Under the Act, only 1433 acres of the estimated 10,796 acres of alienated land are eligible for restoration.

(Haseena, 2006; Sujith et al., 2014) and infant deaths due to malnutrition have been widely reported as recently as 2013 (Ittyipe, 2013) which brought Attappady under national media attention (Koshy, 2013). A study of the Human Development Index ranked the tribal communities well below the averages of Kerala and other Indian states (Sujith et al., 2014). In sum, a picture of extreme vulnerability emerges for the tribal communities of Attappady. Government agencies did take note of these developments, and a variety of programmes have been launched since the mid-60s with the intention of ameliorating adverse social, economic and ecological conditions.

4.6 Development interventions

In the first years following independence, development policy in tribal areas was heavily influenced by the philosophy of India's first Prime Minister, Jawaharlal Nehru, and anthropologist, Verrier Elwin (Guha, 1999). They envisaged a soft, humanist approach that balanced the need for development with respect for the cultural and social integrity of tribal societies. The wisdom behind this thinking was that fragile societies should not be overwhelmed and their identities threatened by unwarranted developmental pressures (Mahapatra, 1994). At the same time, Nehru was of the opinion that they should not remain 'museum pieces' living removed from a changing, national context and the opportunities for positive change and a better quality of life. Affirmative action was seen as an instrument to protect and develop tribal areas. Constitutional and other legal amendments were subsequently enacted to protect tribal societies and their land, and specific schemes for upliftment of these societies were launched. The fifth and sixth section of the constitution grant a certain degree of autonomy to tribal areas. Resources to finance development activities are divided between the central and state government.

Kerala's outlook on tribal development was largely in unison with the set, national paradigms with key differences ingrained in its own political functioning. Currently 38 tribal communities exist in Kerala with distinct - yet similar - cultural and economic practices and ethnic traits. Social discrimination, land alienation and poverty like conditions are, in varying degrees, shared features that characterise their socio-economic state up to the present day (Kurien, 1995; Mathur, 1977; Kunhaman, 1981; Kjosavik and Shanmugaratnam, 2007)

Attappady was established as a tribal block in 1962 to allow for greater autonomy and the instituting of tailor-made programmes. Initially the emphasis lay on physical and social infrastructure development such as roads, water, healthcare centres and educational institutions. To diversify livelihoods, animal husbandry projects were launched. Kundha River Valley project was a major project (still operational today) to stop river siltation, and the Attappady Valley Irrigation Programme was created to provide irrigation water to Agali and Sholayur panchayats. Land rights issues were taken up on paper at this point as well.

The 70s saw the emergence of Integrated Tribal Development Blocks. These institutions were formed all over India to become nodal agencies to coordinate all government departmental functioning (agriculture, marketing, financing) and to promote 'holistic' development. Housing and economic development were focal areas during this period. The Western Ghat Development Programme resulted in the setting up of two cooperative farming societies (coffee, pepper, cardamom) and a number of smaller investments in forestry, agriculture and animal husbandry. During the 80s and early 90s, national self-employment and wage employment programmes played a prominent role. Decentralisation under the Panchayat Act of 1996 saw the granting of local self-government status to the three gram panchayats of the Block, together with increased local autonomy and decision-making powers.

More recently, the largest targeted tribal development scheme in terms of funding and ambition, was the Attapaddy Wasteland Comprehensive Environment Conservation Project, implemented through the Attapaddy Hills Area Development Society (AHADS). Its objective was: 'ecological restoration of degraded wastelands and sustainable livelihoods with special focus on indigenous communities using participatory resource management methodology' (AHADS, 2010:3). The project was funded mainly by Japanese Overseas Development Assistance and incurred expenditure of 219 INR crore[31] in the years between 1996 and 2010. Institutions were formed to include the tribal community in eco-restoration activities and physical infrastructure construction such as housing, bridges, irrigation channels and micro-check dams. A number of basic services related to education and health care were also funded. Research under the project included assessment of ecological health, eco-restoration potential and linkages to the livelihoods of the

[31] 1 crore=10,000,000/ 219 Crore is approximately 34 million USD.

tribal communities. Project works continue to be visible in Attappady through physical infrastructure improvements such as bridges, roads and also biophysical improvements through ecorestoration works, distributed in parcels over the Block. Some successes have been recorded over the span of the project period, mainly of a physical and technical nature, these being recovery of wastelands, increased availability of water in select places and recovery of farmland (Takaki, 2012). The sustainability of these developments, however, is questionable (Takaki, 2012). By providing employment, AHADS created a potential avenue for livelihood diversification and building of institutions. The end of the project was extended a few times but it ultimately failed to garner support and funding in order to continue (Rajagopal, 2013).

4.6.1 MGNREGA in Attappady

The MGNREGA coexisted briefly with the wasteland project before the latter was ultimately wound up. Attappady came under the first phase of the implementation of the MGNREGA in 2006 and has been functional ever since. It is the most significant development scheme in operation since then.

Given the special status of the Block, the schemes ambits have been directed particularly at improving the socio-economic conditions of the tribal communities. Especially from 2010/11 onwards additional regulations were introduced that aim at their empowerment and promise to deliver livelihood renewal. An action plan was put in force for this purpose (The Hindu, 2011). It aims at the development of tribal development landholdings to enable a 'return to agriculture' forof the tribal communities – apart from providing income and employment. The administration on its own account has described these activities as successful (Prabhakaran, 2013). In total 25,750 acres of tribal land were agriculture related development activities. In the first phase 3,344 acres of land were earmarked for development. The aims of which were to increase the productivity of fallow or degraded land and provide an incentive for the tribal households themselves to develop these. Also, it was supposed to provide an entry point for other, associated programmes to step in and make these activities successful, for instance through support from the agriculture department (for instance provision of seeds). Tribal land development was given priority by not allowing development of lands belonging to other communities or private lands until tribal land

development has been exhausted or is not feasible anymore in a particular area. In practice development works can involve minor irrigation works, clearing shrub growth and preparing land for sowing, pond construction, construction of bunds or terracing among other allowed activities. Paper 2 and 3 explore the MGNREGA in Attappady in detail.

5 Research design and methods

5.1 Development studies and interdisciplinarity

‘Nature knows no pause in progress and development’ (Johann Wolfgang von Goethe).

Within the social sciences, development studies take the role of an interdisciplinary field that connects disciplines as disparate as economics, geography, political science, ecology or sociology. At its core, it seeks to understand fundamental processes of dynamic social change through the study and interaction of the nation state, market and society. Prominent schools of thought are informed by theoretical perspectives such as modernisation, dependency, structuralism or post-developmentalism. Each school and discipline has its own favoured method to find answers to contingent questions. Consequently, research in development studies involves a host of different methods. For example, economics tends to rely on positivist methods such as questionnaires, while sociology is interpretive and involves interviews (Matthews and Ross, 2010). Both methods can generate valid knowledge, and a combination of both has been used in this study. In this sense, the approach of the study is guided by ‘critical methodological pluralism’ (Olsen and Morgan, 2005), with each method directed and driven by the respective research questions and subject of interest (Danermark, 2002).

5.2 Research design

Case studies have become a popular research design choice, valued for their versatility and long history of productive application (Yin, 2009). Gerring (2004:342) defines a case study as ‘an intensive study of a single unit for the purpose of understanding a larger class of (similar) units’. He distinguishes between three types of design, based on their temporal and spatial variation in analysis. A Type III case study design was adopted, which includes diachronic as well as synchronic elements. A ‘case’ can composed of a number of units. The thesis deals with the more general case of a state instituted development scheme and its role in climate change adaptation. Each of the papers present different units, levels of abstraction and analysis that inform and generate knowledge in this context. Paper 1 takes the case of the MGNREGA in relation to its

mainstreamed adaptation role in India, Paper 2 and 3 go on to study the case of the MGNREGA in the field study location (Attappady) over the research period and paper 4 takes the case of Attappady in relation to local adaptation – all units feeding, in their distinct ways, into the overall theme of the research. In general, the usefulness of a case study approach lies in the design's emphasis on context (Tsoukas, 1989) and in generating explanatory knowledge (Sayer, 2000). One of the central points of contention relates to the scope for generalisability of such studies. It is argued that these lack representivity and can hardly be used to draw wider inferences, whereas others do not consider such inferences to be necessary as they feed into a process of 'naturalistic generalisation' (Stake, 1995). Also, it is not a prerequisite for all research to be in itself generalisable, but rather to generate knowledge on a particular phenomenon, as illustrated by an anthology of case studies by Lin (2004).

5.3 Selection of field study area

A number of considerations influenced the selection of the field study area. Attappady was chosen because it provides a set of relevant and interesting conditions that relate to its socio-economic profile, history of rapid change, development interventions and phases of environmental shifts and alteration. The ambitions of the MGNREGA to work within this vulnerability context have been particularly pronounced, as evidenced by regular media coverage and attention of the state administration. While the empirical data is limited to a tribal development block, it is hoped that findings provide some generalisable knowledge – especially in the context of the relationship between the scheme and addressing development concerns of extremely vulnerable people – who share related development concerns all over India.

While individual studies have been undertaken[32], no intensive, critical study on the multiplicity of roles, effects and limitations that the MGNREGA has in this development context have been discerned so far. Another advantage of choosing Attappady relates to the availability of secondary data sources, both from the official sources and from independent research. Prior research helped inform and frame parts of the study. Data sources from officialdom need to be treated with caution, as the processes of collection can be influenced by political considerations, the lacklustre attitude

[32] Kuldip, (2013); Poonia, (2012).

of enumerators and by faulty design or data entry. But it has to be kept in mind that the quality of such data from Kerala is comparatively better than that which is available from other Indian states and every effort was made to qualitatively substantiate and critically scrutinise the secondary data. Finally, I have a basic knowledge of the language (Malayalam) spoken in the area which was helpful in conducting fieldwork.

5.4 Primary data collection methods

Primary data was collected through semi-structured interviews, participant observation and other interview forms. Prior to starting interviews, informed consent was obtained. It was clarified that the information will be used for research purposes only, that responses will be treated with confidentiality and not for any other purposes. If the interviewee felt comfortable, interviews were tape-recorded. This was possible in most cases – but when I felt that there were apprehensions, that it was inappropriate or that the respondent did not feel comfortable, I refrained from taping the conversation. As far as the reliability of data is concerned, all of the collected primary material stems from the personal efforts and enquiry of the researcher. Collection followed a clear methodology. Detailed notes and transcripts of interviews and other field observations were taken and meticulously recorded. This was done during or immediately after the interviews itself, and at the end of a fieldwork day with summaries of observations and data collected noted. At the same time, I tried to remain sensitive to cultural considerations of respondents and did not try to push for cooperation if not desired. Of pivotal importance was my field assistant who was instrumental in guiding me to remote areas and who also helped with the process of translation, if necessary. The field assistant was of 'mixed origin', having a father from the non-tribal community and mother from the tribal community. She was well versed in the language, culture and different dialects spoken which made it easy for her to interact with a range of respondents. The assistant was informed of the purpose of the research and was subsequently instructed for the role she was to assume in this regard.

5.4.1 Semi-structured interviews

Initially, when entering the field, I intended to use household survey questionnaires as the main form of data acquisition. After a few trial runs, I realised that some of the richness of the fieldwork area escaped scrutiny and I allowed more space for respondents to elaborate on key questions. In this sense, the data acquisition form can be considered as a semi-structured interview. In total, 190 semi-structured interviews were personally administered by me, with my field assistant helping in translation when required. For instance, in areas where spoken dialects differed and there was a communication gap. A translated, malayalam version of the semi-structured interview form was provided for her so that we could easily co-ordinate and move along the questions in unison[33]. The structured part of the interview overweighed and helped in aggregating and standardising research data. Socio-economic details (age, sex, caste, education, income), asset status (financial, physical, natural, social, human), involvement in the MGNREGA (days of work, work undertaken), awareness of provisions and entitlements (decision-making process, unemployment allowance) and perceptions of the programme (difficulty of work, improvement in quality of life, most or least favoured aspects). Semi-structured parts of the interviews allowed respondents to orally elaborate on key questions, for instance on agricultural problems faced. A maximum of one hour was spent on each interview. In some cases, outside of the semi-structured interview, respondents were identified as key informants and more in depth conversations held with them later on.

A household in the study was defined as 'usually a group of persons who normally live together and take their meals from a common kitchen unless the exigencies of work prevent any of them from doing so' (Census, 2001:2). In order to guarantee a higher degree of representivity, the number of interviews was stratified according to the relative population size of each panchayat. This means that the majority of respondents were drawn from Agali panchayat (48%), and from Pudur (23%) and Sholayur panchayat (27%). Worksites were central to the sampling process. Overall, 40 of them were visited and respondents drawn at random. Random selection was effected either by spinning a pen among attendant labourers or by selecting at random from the muster roll list. Not more than five respondents were selected from each site. To ensure a broad spread of

[33] While I am able to understand and converse in Malayalam I only possess limited ability to read and write in the language.

respondents and to acknowledge the diversity of works undertaken, 40 wards were visited. This was to avoid overconcentration and bias in the findings. Given the limited time and resources available, households that partake in MGNREGA work were personally visited on days when no MGNREGA work was undertaken. (Given the frequency of holidays, strikes and other reasons for non-work, this was a necessary step to complete data collection but included only 20 households). In total 162 female respondents and 28 male respondents formed part of the study with 113 respondents being from the tribal community and 77 from the non-tribal community. 18 worksites were surveyed in Agali, 12 in Sholayur and 10 in Pudur. Data collection for this part of the research was carried out over a six-month period from November 2011 to April 2012. This data is analysed and disseminated in Paper 2, 3 and 4. In Paper 2, the data was used to study the diverse impacts of the scheme, keeping the particular vulnerability context of Attappady in mind. In Paper 3, the data was used to discern outcomes and processes involved at MGNREGA worksites and in Paper 4 particularly in the context of agricultural issues.

5.4.2 Key informant interviews

Key informant interviews were carried out with local political leaders, government officials, social activists, MGNREGA workers and mates, representatives of non-governmental organisations and academics. The purpose of this exercise was to better understand the development dynamics in Attappady, its livelihood practices, the MGNREGA's functioning, its integration into local development planning and the relationship between the local population and the government. Officials of all the three panchayats at the block level and state level were interviewed, this included officials of each MGNREGA section office, the Block Programme Officer, state mission director and peoples' representatives. Interviews were also held with representatives of Kudumbashree units, social activists, AHADS officials and academics with a long history of involvement in development issues of the Block. For instance, interviews were held with the Block Programme Officer in early 2012 to tease out his understanding of the MGNREGA's dynamics on rejuvenating tribal agricultural practices and also the limitations he perceives. The interviews were normally loosely structured around an interview guide and followed a snowballing approach, where key persons would identify others who could assist in providing more in-depth information. Recordings were kept by note-taking, tape-recording the conversations or by using both methods

in combination. Data collection took place over different periods from November 2011 to April 2012, December 2012 to February 2013 and in February 2014. In total 25 of them were held and used according to the thematic area of the respective papers.

5.4.3 Focus group discussions

Focus group discussions are helpful in reducing the distance between the researcher and the researched (Madriz, 2003). Five focus group discussions were held. Location was a criteria when taking a decision on where to hold them and who would subsequently attend. The settings were in five different areas spread across Attappady's centre, its eastern and western edges. Each area displayed a differing demographic composition and ecological profile. People from each respective locality were invited to a public place to discuss the MGNREGA and agricultural issues. Between six and nine people attended each of these meetings. Key questions were noted down beforehand, but the discussions were open-ended and entered areas of development complexities and climatic issues. The purpose was to gauge the different livelihood practices, challenges and commonalities, the MGNREGA's role in promoting agricultural practices and its role in livelihoods based on geographic dispersion and attendant issues. For instance, it was discovered that in Agali panchayat, along its south-western side in Jellipara, MGNREGA was applied in a much more integrated manner into prevalent resource regimes, even though it was not a major employer. On the other hand, in the drier eastern parts around Mulli, MGNREGA's role was primarily as an employment driver with its works not being integrated into agriculture, due to inhibitory climatic conditions. Also, ethnic compositions played into the MGNREGA playing a differing role in different localities which was further explored in these discussions. These were held between December 2012 to February 2013.

5.4.4 Participant observation

During the fieldwork, I lived for the most part in a rented accommodation in Agali village but also in different guesthouses in the Block. Apart from being invited for meals and sharing community activities in and around Agali, I attended meetings of the local village councils (grama sabha), and MGNREGA-related events such as meetings of mates. The Block was wholly traversed by

walking, taking public transport or a jeep that was hired to access the more remote areas, with conversations being held with people along the way. All of these helped me to gain a sense of the everyday life of people. On some occasions, a whole day was spent at a single MGNREGA worksite where I would take part in work activities to get a sense of the work conditions and the social dynamics at the site. Rather than being a 'complete participant', I took the role of 'the participant as observer' at the worksites and outside (Matthews and Ross, 2010: 258). In the process, I revealed the purpose of my presence, but still aimed to get a better understanding the environment within which the research took place. Insights from this part of the fieldwork helped me particularly in framing papers 3 and 4. Simple observations on landscape, people and economy were noted down while traversing the Block. Notes were also taking on worksites. One of the purposes of subsequent field visits was to review the state and use of sites one or two years after the initial study.

5.5 Research challenges

Attappady has been subject to a number of research studies instituted by the government and private parties. One of the potential perils of this situation is that respondents may suffer from 'research fatigue' and lack motivation, enthusiasm or interest to participate in yet another research study. In addition, it was possible that respondents could be well prepared to answer structured questions and anticipate responses. In the field I encountered instances where respondents questioned why 'so many researchers have come and gone but our lives haven't changed'. I took cognisance of these doubts, acknowledged and discussed them. It was not possible nor ethical to promise concrete outcomes from this research, but the hope and intent was expressed that the findings would feed into a wider process of change, not least into policy processes, and that the research would be publicly disseminated in Attappady after completion. In only two instances was I asked for money in return for the respondents' time (which I refused to give). However, in general, overall willingness of respondents to actively participate in the research far outweighed concerns associated with research fatigue.

Worksites were chosen as central data collection sites. The attendant workers were mostly women who were not usually the head of households. Only with respect to a few questions and in a small number of cases did this prove to be a hindrance in gaining accurate household data. More often,

the interview environment gave them an opportunity to talk freely without feeling constrained by 'paternalistic pressures'.

Between 2011 and 2012, Attappady experienced drought-like conditions that influenced some of the information gathered. Water shortages and income shortfalls, for instance, were more widespread than at other times. Even though conditions during this period could not be termed normal, droughts are a regular occurrence. This helped me to gain additional knowledge of the impact of a climate event, of respondents' strategies and of the role of the MGNREGA in this situation.

Updates to the rules and regulations of the Act are issued periodically. For instance, practically, the 150 day employment provision for backward areas was only implemented after the core fieldwork was conducted and is consequently not reflected therein. Some livelihood support activities (such as support for dairy activities) allowed now under the scheme were only in a nascent state in the first fieldwork phase. Similarly, there could be fluctuations and variations in numbers of employment days or other data values with respect to the MGREGA over the initial research period. This constitutes a limitation, given the changing nature of the scheme, but does not affect overall research conclusions.

5.6 Secondary data

Multiple secondary data sources were used in this study. They concern the history of Attappady Block, MGNREGA, Indian climate policy, the climate change negotiation process and related concepts. Books, journal articles, consultancy reports and policy documents were used as data sources for these themes and topics. Library facilities at the Centre for Development Studies in Trivandrum and at the AHADS headquarters in Agali, were used to obtain documents and reports concerning Attappady's environmental and developmental history and also to source region-specific studies on the MGNREGA. From the AHADS library, climatic data was obtained as well. Policy documents on the MGNREGA are largely available online and are continuously updated on the official website. The block and panchayat offices of Attappady held official directives, guidelines, command papers and policy information. Other policy documents relate to the

UNFCCC negotiation process and Indian climate policy. Journal articles and official reports were obtained from different libraries in Norway. A review of literature formed the main data source for Paper 1. All other papers used a combination of primary and secondary data sources

6 Summary and conclusion

As a conclusion to the introductory part of the thesis, this section provides a succinct summary of the four papers. For the sake of coherence, concepts and content already touched upon in earlier sections are only mentioned in the briefest possible way. Given that each of the papers is an independent and standalone piece of work, there invariably exists a potential for overlap. Ultimately, they flow into an overall argument and discussion, outlined in the last part of this section.

6.1 Mainstreaming adaptation in India – the Mahatma Gandhi National Rural Employment Guarantee Act and climate change (Paper 1)

Paper 1 discusses the case of the MGNREGA from the perspective of a mainstreamed adaptation policy and relies on secondary data for a conceptual exploration. It argues that the schemes inclusion in the climate change policy discourse has been 'serendipitous', without clearly delineating what its ambitions in this respect really are. Including the scheme under a climate change agenda poses some other problems as well. It can be misused for political purposes and governance issues ingrained in India's administration and polity limit the schemes reach. Also, resource allocation is ultimately thinly spread. On the other hand, by virtue of the MGNREGA's flexible, feasible, legitimate, scaled and equitable design and character, it can and does play a documented role in reducing vulnerability patterns of India's rural poor, while at the same time not being transformative.

The paper argues that the MGNREGA follows a pragmatic policy approach, which carries a number of co-benefits and satisfies a range of normative benchmarks that describe mainstreamed adaptation action. The scope for reform and the lack of alternatives that operate at its scale provide additional justification for the MGNREGA's application for climate change adaptation ends. Given these base conditions, it can present itself as a viable option to form part of mainstreamed adaptation policy. In order to harness the scheme's potentials, it requires some reform though. The incorporation of a climate lens and increased input of longitudal, empirical interdisciplinary research findings to inform and tweak the scheme are recommended. The existing vulnerability

patterns of India's rural population and India's significant role in the climate negotiation process, give the findings heightened significance.

6.2 Mainstreamed adaptation in practice: India's MGNREGA in Attappady Block – a case study (Paper 2)

Paper 2 goes on to conduct an empirical analysis of the scheme in Attappady from a contextual perspective. The field area exhibits a complex vulnerability pattern within which the MGNREGA attempts to target the most vulnerable population section, that is, the tribal community. For this purpose the scheme is adapted to extend protective entitlements to tribal land development. Did it contribute to enhance livelihood security, reduce vulnerability, promote adaptation processes and is it inclusive of development concerns of the most vulnerable community sections? Research findings show that proximate vulnerability patterns are addressed and that the scheme plays an important role in providing income support and enhancing food security of marginalised population sections. Particularly women, sick and elderly benefit from involvement in the scheme. Most of the employment activities under the scheme are carried out by female participants and they benefit from associated provisions such as financial inclusion and an accompanying degree of empowerment. Also, savings in bank accounts provide a small buffer in the event of shocks. Development works are centred on land holdings of the tribal community, which signifies a working, protective effect where resource allocation is accorded to the intended beneficiaries. Findings also show that protective disaster risk works have been documented. On the other hand it is doubtful on how lasting and empowering the effects of the scheme really are. Worksites visited subsequently were neglected and little enduring follow up visible. Similarly, seasonal fluctuations, here during the dry season, are not addressed and the present work composition focuses on light earth works with a limited concentration on physical asset works that could reduce exposure from climate events. Existing, structural inequalities prevent the scheme from taking on a more purposeful role and elite capture is not an uncommon experience. Additionally, existing climate vagaries leave some of the activities on land and agricultural development toothless, with maladaptive practices being visible.

The paper shows though that the scheme provides an important coping mechanism in Attappady but that more substantive outcomes, which build up adaptive capacities, are limited. Picking up from paper 1, it continues to highlight the importance which social protection programmes, such as the MGNREGA, can play as part of efforts to provide a degree of protection to vulnerable population sections, in here in its role of enhancing coping mechanisms. However, this inclusion has to be approached with caution as the scheme can only play a limited role as part of wider, more fundamental processes of change.

6.3 Unpacking worksite participation and social dynamics of the MGNREGA in Kerala, South India (Paper 3)

Worksite participation under the MGNREGA and the various interrelated dynamics that find expression through it, has received relatively little attention. In parts, this paper picks up from underexplored aspects, such as working in groups and inclusionary provision in decision making, which have been touched upon in paper 2 and explores them in greater detail. The paper proceeds to construct MGNREGA worksites as spaces that involve interrelated attributes related to process (inclusiveness), on site dynamics (group cohesion, management) and outcomes (instrumental, developmental) as well as factors that influence these attributes. Examined through this 'worksite lens', it argues that processes of decision making are not necessarily inclusive of the development concerns of vulnerable population sections and rather than including participants as active stakeholders, who through their demand drive development works, it is the administration that takes on a trusteeship role. In this sense, political agency of vulnerable participants, which could be part of the MGNREGA efforts, is limited and finds little expression. Mates emerge as key 'development brokers' on worksites that distinctly affect working and outcomes from the scheme. While they are selected through 'grassroots' community development organisations the paper argues that their role should not be excluded from critical purview. The composition of participation is not only a by-product of wage rates and the involvement of female centric Kudumbashree units, but also born out of a social stigma attached to the scheme, that arises from paternalistic societal attitudes. Also it is found that physical productivity elements, otherwise

highlighted in the scheme, are neglected attributes. Rather, social outcomes find expression by improving trust and networks among participants from different ethnic and religious groups.

The paper thus critically highlights some of the limitations of the scheme and its unintended outcomes. It also cautions against a political instrumentalisation of its participatory components as being reflective of the tribal community's demands. Instrumentalisation, that potentially diverts attention from structural issues that affect Attappady's vulnerable, tribal communities.

6.4 Adaptation trajectories and challenges in Attappady, south India (Paper 4)

Attappady plays host to a complex development scenario within which different adaptation trajectories and challenges are present. Paper 4 analyses barriers and factors that affect and influence these. Through the examination of key livelihood strategies, related to on-farm practices, development interventions and migration, the paper explores them. It argues that development interventions have not removed barriers to adaptation, which are anchored in mutually re-enforcing factors of marginalisation, environmental change and resource degradation. At the same time, present day interventions provide an important coping mechanism (as explored in paper 2). In the face of a historical underachievement of interventions, the trust and legitimacy relationship between state institutions and intended beneficiaries has suffered. In addition, questions concerning the trusteeship role taken by the government are posed. Migration, which usually serves as an 'outlet' for vulnerable population sections to relieve pressure during times of distress, is a socially and culturally differentiated phenomenon. Non-tribal communities have the capacity and options that enable social mobility, in the case of tribal communities this is not the case. Place attachment, lack of human capital and discrimination prevent this livelihood diversification strategy from being a viable or preferred option. On-farm adaptation strategies have, partly in response to increased climate variability, contributed to a shift towards intensive, irrigated crop agriculture. This strategy is found to be maladaptive. It furthers processes of marginalisation, resource overexploitation and is ill-adapted to the cultural and ecological context of Attappady.

The paper exposes some of the complexities of development and adaptation in Attappady. The tribal communities find themselves wedging between tradition and forces of modernity, unable to

access the opportunities of the former and at the same time facing dislocated from their roots. A quagmire, to which no easy answers exist.

6.5 Synthesis and conclusion

The thesis examined various aspects of the MGNREGA through conceptual and empirical studies which fall under the overarching research theme of the scheme entering India's climate change adaptation discourse, by way of mainstreaming. The research is presented in four individual papers that explore different, yet interrelated aspects that concern the MGNREGA and adaptation at the national and local level. An overarching theoretical framework that is elaborated in the extended introduction chapter holds these individual papers together.

Research findings point out that the scheme plays an important role in addressing concerns related to climate change adaptation in rural India. At the core of this contention lies the finding that it addresses proximate vulnerability patterns. Its design and character equip the scheme to assume a variety of roles that cover a number of aspects which amplify and generate vulnerability, such as social exclusion, food deprivation, unemployment, environmental resource base degradation and so forth.

However, as empirical findings from Attappady show, the experiences on the ground provide a nuanced picture and highlight caveats, shortcomings, as well opportunities. The intended beneficiaries in the Block draw important support from participation in the scheme. It helps them cope with livelihood crisis (amplified by environmental change and variability) and enhances adaptive capacities to a certain extent, especially by way of providing food security, enabling women, elderly and sick to gain avenues for sustenance, empowerment and providing a buffer to shock events. The vulnerable tribal community draws benefits from protective entitlements, including provisions for land development and working in groups, which improves social trust and networks. In contrast to the high hopes with which it was introduced in Attappady, it falls short from expectations though. The main lacuna therein lies in the fact that it barely touches on structural causes of vulnerability and possibly even deflects from some of them by pointing to the 'successful' functioning of the scheme. It was not found to transform livelihoods and some of its

key, transformative entitlements are not accessible to the most marginalised community sections on account of illiteracy, lack of ability to claim rights and unequal power relations. Resource degradation and local environmental change are widespread in Attappady. The MGNREGA arguably possesses potentials to ameliorate some of them and help in related adaptation processes but only at a superficial level. It was found to be relevant for disaster risk reduction works for instance, but only to a limited extent. Absence of employment provision during the dry season proved to be another shortcoming. Physical productivity elements are in general neglected aspects, which draws attention to the wage-material ratio and administrative functioning. Rather than being an essentially bottom up driven process, the administration takes on a trusteeship role of developing tribal lands and instituting works. In addition, participants are not represented or included in some of the key decision-making bodies and institutions. The local context within which the scheme works is consequently of great significance and substantially affects outcomes. On the one hand, the scheme proves that its flexible design features allow the institution of 'tailor made' development measures for vulnerable community sections. On the other hand, despite its protective and transparent design features, its outcomes are confined within the prevailing political economy conditions, with longer run effects still to be discerned. Adaptation in Attappady is driven and affected by a number of other processes and factors that lie on the periphery of the MGNREGA, such as market forces, cultural attributes and past development interventions.

The scheme's adaptation role can be sharpened though, by explicitly recognising and including provisions that include concerns of climate vulnerability and adaptation. Whether through the linking with insurance schemes, sensitisation of officials, integration of vulnerability assessments or convergence with other policy plans such as the SAPCC. Given the scope for reform and the transient nature of individual rural development programmes in India, this is a feasible and highly relevant prospect.

In the wider political economy of India, a debate has been raging about the future direction of the MGNREGA. The BJP-led government, elected through an overwhelming, popular mandate in 2014, has repeatedly critiqued the scheme as a legacy of the previous Congress-led government. According to the present Prime Minister, it constitutes a 'living monument' (The Indian Express, 2015) of the Congress-led government's failure to provide decent and honest employment options for the rural population. The neo-liberal reform agenda vigorously pursued by the government has

continued to cast doubts over the schemes future. Various proposals have since been floated, ranging from abolishing the scheme altogether to changing its ambit. Some of the proposals relate to restricting employment provision to the 200 most backward districts in India or reducing the wage-material ratio. So far, none of these proposals have been translated into action and the scheme has been extended in its present form. Even though employment provision at a national level has not shown significant increases in recent years, this does not necessarily point to a lack of demand. A paradox in the schemes demand driven provision lies in it being capped at a specified budget – even though employment is guaranteed. The government consequently finds itself having a conflict of interest; on the one hand leveraging the scheme's employment, while on the other having to ,in theory, restrict demand to keep it in line with budget allocations. Commentators have referred to these contradictions as attempts of slowly killing the scheme and limiting its reach.

Despite criticisms and shortcomings, the thesis argues that the MGNREGA, within the realms of public action and social protection, should continue to be part of India's development map. It forms an important livelihood avenue for the most vulnerable population sections and given existing climate variability and the prospect of added climatic changes, this assumes all the more significance. Opportunities for reform exist and the cost of the scheme is acceptable given its benefits and low cost nature. Insights and lessons can also percolate to the international level, with other developing countries taking cues.

However, it has to be kept in mind that adaptation, as a long run process, ultimately needs to address the structural causes of vulnerability, which requires very different solutions. It is precisely these causes that generate demand for a scheme like the MGNREGA. Similarly, the scheme should not be misused to deflect from the core, anthropogenic drivers of climate change located in resource intensive and exploitative consumption patterns and production systems.

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Part II

Papers

Table of contents

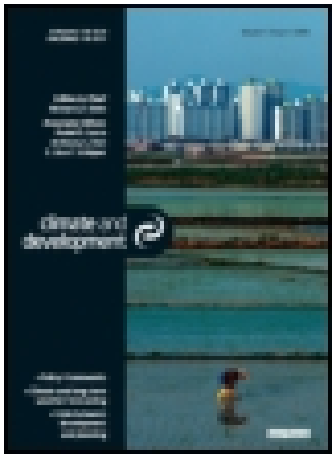
1.) Adam, H.N., (2014). Mainstreaming adaptation in India – the Mahatma Gandhi National Rural Employment Guarantee Act and climate change. *Climate and Development.* [online] Available at: http://www.tandfonline.com/doi/pdf/10.1080/17565529.2014.934772 doi: 10.1080/17565529.2014.934772

2.) Adam, H.N, (forthcoming). Mainstreamed adaptation in practice: India's MGNREGA in Attappady Block – A case study. Journal of Development Studies. Routledge (under review).

3.) Adam, H.N., (forthcoming). Unpacking worksite participation and social dynamics of the MGNREGA in Kerala, south India. Forum for Development Studies. Taylor and Francis. (submitted)

4.) Adam, H.N. (forthcoming). Adaptation trajectories and challenges in Attappady, south India (manuscript).

PAPER 1



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Mainstreaming adaptation in India - the Mahatma Gandhi National Rural Employment Guarantee Act and climate change

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Mainstreaming adaptation in India – the Mahatma Gandhi National Rural Employment Guarantee Act and climate change

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Climate change adaptation has become increasingly recognized as a development policy imperative for the twenty-first century. Still, actionable policy that meets ambitious goals of equitable, efficient and efficacious action has fallen woefully short of requirements. Mainstreaming of climate policy into existing development planning has been suggested as a way out of this impasse. India's central anti-poverty scheme, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has become part of the 'mainstreamed' policy agenda. It is the largest Public Works Programme in the world today but has not been subjected to sufficient research scrutiny for its climate role. The paper attempts to fill this knowledge gap. It locates the climate-development role of the MGNREGA before subjecting it to a critical evaluation. It argues that conceptually, the MGNREGA meets basic normative requirements for mainstreamed adaptation action but that functional and methodological limitations prevent it from taking on a more purposeful role. Though the scheme is not transformative in nature, it can become part of a multi-pronged strategy to reduce vulnerability to climate change in India and possibly other developing countries.

Keywords: mainstreaming; adaptation; MGNREGA; poverty; India; development; climate change; vulnerability

1. Introduction

India belongs to a group of countries considered highly vulnerable to climate change (Maplecroft, 2011). The Intergovernmental Panel on Climate Change (IPCC, 2007) projects changes for the South Asian region in temperature, precipitation and an increase in the likelihood of extreme weather events, such as cyclones, droughts and more intense rainfall. India's population remains largely rural and despite recent shifts in the sectoral composition of the economy remains overwhelmingly dependent on climate-sensitive sectors, such as agriculture, fishery and forestry. Climate events that impede the functioning of these are known to threaten livelihood security for vast swathes of the population. While there are difficulties in assessing the concrete, materialized impact of these climate risks and shocks, the more vulnerable a population is, the lesser its ability to cope (Kelly & Adger, 2000).

A contextual framing of vulnerability considers it a function of present day interrelated, dynamic social and biophysical aspects (O'Brien, Eriksen, Nygaard, & Schjolden, 2007) and advocates adaptations to target present-day drivers of vulnerability rather than see vulnerability purely as a residual impact subsequent to adaptations.

Viewed through this lens, vulnerability to climate change in India is made up of a complex web of social and biophysical factors (Brenkert & Malone, 2005). These can be traced to its geographic location, associated climatological patterns (monsoon), inequitable access to, and distribution of resources, as well as continuing social and economic exclusion coupled with ecological degradation and exploitation (Datt and Sundharam, 2006; Rao, 1994). While the intensity of these issues may differ spatially, they can be found across the length and breadth of the country. In themselves, they are not new and have occupied space in political, social and academic deliberations for many years. But the added layer of risk that rapid anthropogenic-driven climate change poses to desirable development outcomes, like satisfying basic needs for poorer sections of the population, has only recently come to the fore and figured in the domestic policy realm as evidenced by the content of India's policy documents on climate change (GOI, 2008; Ministry of Environment and Forests [MoEF], 2012). Questions here deal with how to design appropriate policy, that address impacts and vulnerability at various scales (national, sectoral and project), into actual development planning.

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Adaptation to climate change is one policy option that has gained currency in development circles at a global level and in India more recently as well and has been highlighted as a development policy imperative for the twenty-first century (Bojanowski, 2012). It also finds its place in India's central policy document on climate change, the National Action Plan on Climate Change (NAPCC) (GOI, 2008). The document constitutes the foundation stone of Indian climate policy and outlines a broad, albeit nascent strategy of how climate and development policy is incorporated into Indian development planning. In a broad sweep it includes all social sector programmes as constituting adaptation measures but refrains from going into programme nomenclatures. Only subsequently with the publication of the second National Communication (MoEF, 2012) select, existing programmes from the social sector are briefly elaborated on. These were chosen based on their relevance to a 'sustainable development' agenda and their perceived convergence with a climate change one. The most prominent programme is the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA, 2005). It was passed as an Act in parliament in 2005 and is the most significant scheme in India's social sector programme shelf in terms of size, scope and ambition.

While there exist obvious overlaps between a 'sustainable development' discourse and addressing climate change through adaptation and mitigation (Huq, Reid, & Murray, 2006), these linkages have found little academic exploration in the case of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), despite it being a part of India's climate change strategy and the largest Public Works Programme (PWP) in the world. How does one locate the role, explore opportunities and delineate limitations of the MGNREGA in a climate-development policy discourse?

A review of literature, policy documents and secondary data sources constitute the body of data for this analysis. Methodologically, a political economy framework locates the scheme in the Indian development discourse and examines its relationship with that of climate change adaptation. A contextual framing of vulnerability provides the theoretical basis and is explored in conjunction with a brief review of 'mainstreaming' ideas in the next section. The paper then proceeds to position the MGNREGA in India's development context and draws linkages to its adaptation-relevant applications before engaging in a critical evaluation of the scheme's climate role.

2. Vulnerability and mainstreaming

Climate policy, the process on which it draws and the outcomes it desires rests, among other factors, on assumptions and knowledge claims imbued in respective theoretical framings. For example, a resilience framing draws heavily on concepts from ecological thinking and will put the onus of policy outcomes on ecological integrity, possibly overriding other desirable outcomes (Eakin, Tompkins, Nelson, & Anderies, 2009). The definition of vulnerability (who, how, what and why) plays an essential part in these theoretical deliberations and forms a base layer when it comes to informing adaptation policy and action. This paper uses a framework that interprets vulnerability as contextual (O'Brien et al., 2007) and is elaborated on in the 'starting point' perspective.[1] It sees it as 'the ability or inability of individuals or social groupings to respond to, in the sense of cope with, recover from or adapt to, any external stress placed on their livelihoods and well-being' (Kelly & Adger, 2000) and seeks a multi-dimensional explanation to present-day vulnerability generated by socio-economic drivers in conjunction with biophysical ones. The structuring of vulnerability in this way allows for a more holistic conceptual exploration of the MGNREGA that acknowledges the complex, interdisciplinary nature of climate vulnerability in India today and its evolving relationship with development policy.

New insights into climate change science, combined with a lack of decisive resolutions and purposeful, binding agreements at the United Nations Framework Convention on Climate Change (UNFCCC) process resulted in progressive increase in attention to adaptation and in particular to the necessity of time-bound practical action. Mainstreamed adaptation refers to 'the integration of climate concerns and adaptation responses into relevant policies, plans, programs, and projects at the national, sub–national and local scales' (USAID, 2009). A sense of urgency has led to renewed calls for its application. The eighth Conference of Parties (COP) at New Delhi states that adaptation 'requires urgent attention on the part of all countries' (UNFCCC, 2003). More recently, the seventeenth COP Accord at Durban (UNFCCC 17, 2011) highlighted and reaffirmed its commitment towards a process of national adaptation planning. It put down a set of guidelines that emphasize

> adaptation planning in the broader context of sustainable development planning' and importantly, lists as one central objective the facilitation and 'integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies

Even then, in practice, adaptive action has encountered many obstacles and is still not incorporated into policy and projects to the extent made out to be required (Anderson, 2012). Why has action lagged behind needs and goals (Adger, 2004; Klein, Schipper, & Dessai, 2005; Pelling, 2011)?

(i) Development of the field of climate change adaptation has been a long process and policy relevant

applications have emerged only recently. Disciplinary divergences between natural and social sciences contributed to the slower development of this process.

(ii) Climate change was essentially framed as an environmental problem and most resources were earmarked for processes associated with mitigation. Adaptation policies were similarly affected by this framing and emphasized technocratic solutions rather than engaging with broader causes of vulnerability.

(iii) Quantitative, evaluative criteria of what constitutes 'good' adaptation action are more complex than those related to mitigation. Adaptations tend to happen at a local scale and it is cumbersome, time-consuming and expensive to establish a frame of analysis for adaptation on larger spatial scales.

(iv) Funding continues to be scarce in the face of other priorities of more immediate concern.

(v) Awareness among public officials in many countries on adaptation remains limited.

(vi) The UNFCCC is still locked into a 'dated treaty' which is not conducive to adaptation policy.

This does not mean that no adaptation action is being undertaken, but what is, rarely meets the normative requirements of effective and efficacious adaptation policy (McGray, Hammill, & Bradley, 2007). Overcoming these hurdles is a critical challenge in a rapidly changing climate.

Mainstreaming of adaptation strategies is an attempt to break the deadlock on scaled implementation. They acknowledge the ground reality that adaptations will not be implemented as a standalone policy, divorced from other pressing development priorities. This applies especially to Least Developed Countries and other developing countries that lack adequate resources, public opinion, appropriate political processes and have more pressing needs to devote resources to. Mainstreamed policy is expected to reduce policy friction, enhance financial resource availability and increase efficiency in comparison to setting up new, separate institutions and structures for the express purpose of adaptation (Lebel, Li, & Krittasudthacheewa, 2012). The integration of adaptation policy into existing development policy and vice versa has also started to take shape in developing countries over the past decade. Recent studies on country experiences from the Philippines (Lasco et al., 2009) and Mozambique (Sietz, Boschutz, & Klein, 2011) suggest though that a combination of low priority assigned to adaptation, lack of relevant knowledge and institutional barriers continue to hinder more purposeful action. In general, besides the mentioned shortcomings, mainstreaming in developing countries is still in its early stages and suffers from a lack of vision, funds, research input as well as policy integration and clarity (Tearfund, 2006). Besides addressing these constraints, a critical factor that has been identified for progress in poorer countries lies in increased resource allocation and targeted assistance, specifically from bilateral and multilateral donor agencies (Klein, 2011; Tearfund, 2006).

What about India and mainstreaming? Its NAPCC and National Communications refer to mainstreaming by highlighting the relevance of existing social sector programmes for adaptation purposes. The MGNREGA figures in the social sector list and is also the most prominent item.

3. Locating the MGNREGA in India's development discourse

Conceptually the MGNREGA belongs to the category of PWP's, these are non-market social and economic policy tools that have found extensive application in the developed and developing world. In developed countries they have been primarily used as tools for Keynesian style macro-economic management, while in developing countries they primarily act as social safety nets for the poor and vulnerable (Subbarao, 1997).

The use of PWPs (also known as wage employment programmes) has a long history in rural India and can be traced back to the government's initial efforts to establish a 'socialist pattern of society', wherein state directed development initiatives with social outcomes were prioritized over private ones post-Independence (Datt & Sundharam, 2006). A slew of PWPs, on a regional as well as national level, have been launched over the past four decades to combat extreme poverty and generate employment, albeit with mixed results (Adam, 2009). Of note here is the Maharashtra Employment Guarantee Scheme (1980–1997), whose relative success (Gaiha & Imai, 2002) influenced the modelling of subsequent programmes, including the MGNREGA. While the MGNREGA builds on and is influenced in design and implementation by past experience, the rationale for its passing can be found in the inequities that accompanied the post-liberalization era of the 1990s. The decade following the economic reforms witnessed an unshackled market that drove unprecedented economic growth and wealth accumulation but also saw the dismantling of public welfare provisions and programmes, persistence of extreme poverty and increased levels of inequality (Datt & Sundharam, 2006). This in turn maintained, aggravated or redistributed existing vulnerability patterns.

This socio-economic scenario prompted the political establishment, civil society actors and academics to argue for increased state intervention to ensure that India's development proceeded in a more just and equitable manner and to re-invigorate its rural sector (Adam, 2009). A remodelled PWP, here in the form of the MGNREGA, was considered to be an important part of any addressal strategy. In 2005, a newly formed federal government passed the National

Rural Employment Guarantee Act and within a few years the scheme started to figure in the domestic climate policy discourse as well.

The idea of using social protection programmes for climate adaptation is not entirely new (Davies et al., 2009) but there is a lack of context specific research on these synergies. The next section explores the adaptation linkages with respect to the MGNREGA in India.

3.1. *Development and adaptation synergies under the MGNREGA*

The MGNREGA is financed by the federal government[2] and was implemented in all rural districts in three phases from 2006 to 2008. It functions on the basis of demand for employment from rural households and provides them with a legally enshrined set of provisions that are intended to ensure their right to employment. For instance, employment has to be provided within 15 days of application, legal documentation issued and penalties are levied on officials in case of non-compliance. As a check and balance, a number of transparency guarantees exist and are enforced through different sets of mechanisms that include the use of a modern information technology infrastructure, publicly available information and independent audits. The explicit purpose is to promote 'sustainable development' (NREGA, 2005). Centrepiece of the scheme is the legal guarantee to provide 100 days of (unskilled) labour employment against a minimum wage fixed by the state to every rural household that demands so. This labour power is then to be directed towards the creation of durable assets[3] and works that lead to the enhancement of ecosystem services. Local village councils (Grama Sabha) and lower tier government structures are the nodal agencies who consult on resource allocation. Majority of items in the scheduled list of permitted works fall under the 'eco-restoration' category. For instance, water conservation like renovation of traditional water bodies, flood protection, drought proofing (including afforestation), micro and minor irrigation works, land development and plantation horticulture. In 2012, the list of works was expanded to support other livelihood enhancing activities, such as milk production, husbandry development or organic fertilizer production.

A special focus is given to the empowerment of people from especially vulnerable sections in Indian society, namely small and marginal farmers, scheduled castes and scheduled tribes (SC and ST), other backward classes (OBCs), people below the poverty line and women. These are provided with special reservation, priority in work allocation and land development. Payments are made to labourers through provision of bank accounts, which can be of particular benefit to women (Ministry of Rural Development [MoRD], 2012b). In totality, an attempt is made to touch a multitude of material (economic, physical and natural) and non-material (social exclusion) vulnerabilities and their drivers, which are ingrained in the interrelated social, economic and ecological realms of India's rural landscape. The schemes governance structure is illustrated in Figure 1.

The link of the MGNREGA to sustainable development principles appears quite straight forward and has been subjected to an array of research studies (MoRD, 2012). What about the overlap of development and adaptation activities? McGray et al. (2007) outline the forms in which it is done: Drivers of vulnerability are addressed through fostering and diversifying existing livelihood options as well as

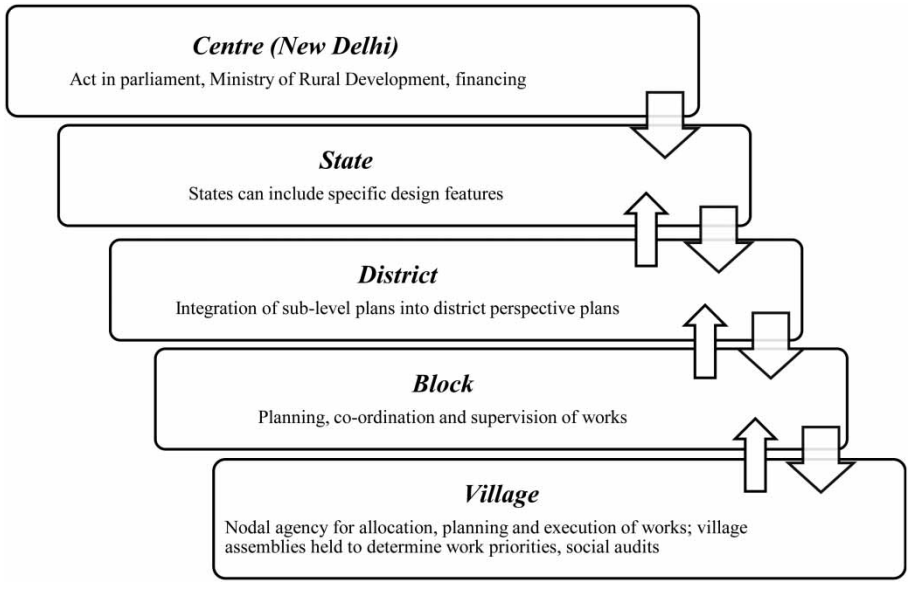

Figure 1. Decentralized governance structure of the MGNREGA.

targeted gender and social upliftment initiatives; planning and inception of disaster reduction works; and lastly response capacities are levied by building, strengthening and expanding the scope of social institutions. All these forms can enhance adaptive capacity and reduce vulnerability of poorer communities to climate change. Table 1 illustrates a functional typology of the scheme.

The MGNREGA denotes deliberate public policy action that combines elements of disaster risk reduction and social protection to change conditions that impact the vulnerability context of the targeted population. In terms of its timing it takes up a dual role; it can aid recovery efforts and provide relief in the immediate aftermath of disasters (*ex post*) while at the same time enhance resource buffering in preparation/advance of potential disasters (*ex ante*), for example through physical response activities that protect against weather-induced calamities, such as landslides or flooding. Non-physical response activities can be levied through the wage component to prevent distress migration and provide immediate purchasing power.

While the impacts of the MGNREGA are primarily manifest at the local scale, the integration and interlocking of the various governance levels provide for further, more widespread effects at broader scales. Time horizons for planning are mostly on a yearly basis but have mandates to be integrated into mid-term development plans at the district level. Davies et al. (2009) detail the various roles that such a scheme, as part of wider social protection agenda can assume. These roles can be protective and preventive and are in effect geared to maintain essential social and ecological system functions. Beyond maintaining these, the MGNREGA also plays a part in enhancing the adaptive capacity of a community (promotive role) through its economic (wage), asset-related works and institutional components. Sectors targeted and included are: water resources, ecosystems and their services, coastal zones, human settlements. Government departments allocate resources but private (individuals) have a certain degree of autonomy in deciding where and how they can be used. The public and private elements are consequently not fundamentally divorced. Civil society plays a part by facilitating works to be executed and as a check and balance through involvement at various stages of plan formulation and conducting social audits.

4. Critical evaluation

Following the explanation of climate-development linkages of the MGNREGA, this section will draw on non-strict qualitative criteria as a frame of analysis to critically evaluate the scheme. These criteria (described below) assist in delineating the broad spectrum of issues involved when examining process, outcome and context of the scheme from a mainstreaming of adaptation perspective.

What are the normative qualities that are called for in adaptation, specifically in developing countries? The principle guideposts can be set as follows (Anderson, 2012; Eriksen & O'Brien, 2011; Heltberg, Siegel, & Jorgensen, 2012; Huq et al., 2006): (i) Adaptation policies are more relevant if they become constituent blocks of existing development policies and deal with present-day climate variability; (ii) instead of project-based and piecemeal approaches, multi-sector and country-wide policies operating at multiple levels should be instituted; and (iii) climate change concerns have to be linked to poverty alleviation programmes. The MGNREGA meets these guideposts. Even then, not all action that falls under the adaptation category is necessarily good. The use of quantitative criteria here as a tool for evaluating adaptation is fraught with serious limitations given the inherent uncertainty of climate change and lack of feasible methodology to holistically assess costs and benefits at multiple scales (Adger, 2004; Klein et al., 2005). These limitations make the use of qualitative criteria vis-à-vis assessing a scaled adaptation intervention appear more practical at present. They contain pointers to avoid maladaptation, which describes 'action taken ostensibly to reduce vulnerability to climate change that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups' (Barnett & O'Neill, 2009).

This critical evaluation looks at the policy process of the intervention (MGNREGA) in terms of its effectiveness, equity, legitimacy and efficiency (Adger, 2004), and

Table 1. MGNREGA typology (modified after Fuessel, 2007; Smit, Burton, Klein, & Street, 1999; Smit & Wandel, 2006).

Attribute	Term for MGNREGA
Purposefulness	Planned/intentional
Timing	Reactive and anticipatory
Temporal scope	Short-term
Spatial scope	Localized
Type of climate hazard	Climate variability
Function/effects	Preventive (coping strategy), protective (coping strategy), promotive (adaptive capacity)
Form	Public, state driven
Performance	Legal, institutional, administrative
Domain	Water resources, ecosystems and their services, coastal zones, human settlements
Actors	Public, civil

Table 2. Summary of evaluation findings.

	Strengths	Weaknesses
Process	• Meets normative qualities for scaled, mainstreamed adaptation	• No specific adaptation planning and research input
	• Inclusive and transparent bottom-up approach	• Not transformative
	• Flexible mechanism	• Lack of interdisciplinary, empirical research inputs at scale
	• Inclusion of socio-ecological concerns	• Political instrumentalization
	• Legitimate and feasible intervention	• Thin spread of resources
	• Promotes social capital	
	• National effort independent from donor finances	
Outcome	• Asset construction focus on works that enhance ecosystem services like water conservation	• Governance issues limit impact
	• Reaching intended (vulnerable) beneficiaries	• Decline in key performance indicators (employment provided and demanded, fund allocation, asset work completion)
	• Enhanced livelihood provision and options	• Doubts on efficiency and productivity, especially quality and durability of assets

outcomes in terms of social justice, ecological integrity and economic impact. These processes and outcomes should ideally meet principles of 'sustainable adaptations'[4] (Eriksen & O'Brien, 2011) and address vulnerabilities and their drivers in rural India through the inter-connected mechanisms of the MGNREGA (employment generation, asset creation, natural resource management and targeted social upliftment). The findings of the evaluation are presented and categorized into strengths and weaknesses, respectively (see Table 2).

4.1. *Strengths*

Bottom-up approaches have emerged as focal points in the design of development interventions and international climate negotiations have started to follow suit (Atteridge, Shrivastava, Pahuja, & Upadhyay, 2012). Much of adaptation planning in developing countries neglects institutional capacity building at the local level and underplays the role of functioning national-local linkages (Agrawal et al., 2012), the MGNREGA on the other hand puts the thrust on delegating responsibilities and decision-making powers to local institutions and actors, while at the same time being a centrally conceived and steered scheme. This can further equity-related processes and empowers people who, in deterministic approaches, tend to be considered passive victims of climate change without the capacity to react (Adger, 2003). In content this is reflected by a regulatory framework that follows the broad characteristics of a soft adaptation pathway (Sovacool, 2011). In it, micro-level interventions that draw on local knowledge and simple as well as low-impact technologies are employed in close consultation with local communities and internal processes of decision-making. Attention is given to restoring or enhancing of natural capital assets, such as ecosystems and forests. Ecosystem responses can include works such as mangrove restoration in coastal zones, afforestation activities in arid areas or spring regeneration works in hilly districts. Structures to blend these ecosystem services with livelihood responses are provided by the MGNREGA, which account for social and ecological diversity. It should be noted here that besides formal decentralization, the extent of involvement, autonomy and interaction between local actors and institutions differs from state to state and remains subjected to empirical research. Still, formally, such an approach is highly flexible, democratic and accountable to local development concerns. These features can be important when having to respond to variable and uncertain climate change impacts in future. The majority of works incepted (MoRD, 2012), including flood protection and drought proofing, relate to water conservation (48%), followed by provision of irrigation facilities to targeted vulnerable groups (SC/ST, People below poverty line, 18%), rural connectivity (18%) and land development works (14%).

Closely related to the bottom-up approach is the social capital aspect which Adger (2003) defines 'as the necessary glue for adaptive capacity, particularly in dealing with periodic and unforeseen hazardous events'. In favourable circumstances institutionally entitled rights, entitlements and mandated action under the MGNREGA can bring diverse community members together to plan, initiate and execute work on locally productive projects and thus contribute to social capital build up. Institutionalization of processes that lead to an engagement of rural stakeholders with governmental institutions builds up increased awareness of entitlements and can reaffirm trust in them. Guaranteed timely wage payments, unemployment allowance, a system of checks and balances at the community and institutional level, opening and payment through bank accounts to participants are building blocks of the scheme and conceptual catalysts for inclusion and empowerment of vulnerable people.

In terms of cost efficiency, activities that confer both, benefits of mitigation and adaptation, are arguably the

most viable climate change measures (Glemarac, 2011). In 2009, the Ministry of Rural Development (MoRD) and Ministry of Environment and Forests (MoEF) decided that afforestation projects can be jointly executed by departments of the respective ministries (MoRD, 2009). The outcome of this convergence is that departments have the discretion to use MGNREGA resources for afforestation/plantation activities. No clear strategy has been charted out on how or whether to integrate afforestation activities under international climate financing architectures (for example REDD +), but the scope exists.

India continues to be vociferous about equity principles on the international stage but a meaningful translation into tantamount action on the domestic front has yet to come to fruition. The MGNREGA is chiefly funded by the federal government and has a positive equity outcome for poorer sections from a macro perspective which bestows it social and political legitimacy. While there exist voices that reject the proposition to provide continued funds based on arguments of economic efficiency and optimization (Gupta, 2011), the scheme remains popular among the rural poor and finds strong advocacy in academics and policy-makers who see it as an indispensable pillar for rural India's development (Adam, 2009; Dreze and Khera, 2009; Mann & Ramesh, 2013). An outlay that consumes less than 1% of Gross Domestic Product is considered by the advocates a necessary, implementable and feasible prop-up for its rural population.

Small and marginal farmers, SCs and STs and women belong to the downtrodden and inherently disadvantaged sections of India society; they are also the primary set of intended beneficiaries of the MGNREGA. Data drawn from the functioning of the scheme (2010–2011) indicate that 40% of the participants belonged to the SC/ST category and overall women constituted 48% of the participating workforce. This indicates a relatively efficient targeting mechanism and programme delivery. Case studies (Haque, 2011; Khera, 2012; MoRD, 2012, Narayanan, 2008) underscore the potential of the MGNREGA to be more than a 'survival scheme' in well-governed and responsive areas, but a catalyst for livelihood independence and diversification for women, marginalized communities and small and marginal farmers. Wages play an important role here. Preliminary evidence suggests that the wage component can reduce distress migration, be used to repay debts, increase food security, become a source of investment in physical, as well as human capital and increase minimum wage rates (Adam, 2009; Centre for Science and Environment [CSE], 2008; Dreze & Khera, 2009; MoRD, 2012; Swaminathan, 2009). All of these can enhance adaptive capacity. Rising wage rates, increased productivity of a set of natural capital assets and employment in lean seasons are other effects that have been documented in research areas. (IISC, 2013; Mann & Ramesh, 2013). Another scientific study (Esteves et al., 2013) found a reduction in agricultural and livelihood vulnerability particularly on account of enhanced biophysical productivity. While there is a focus on certain social groups, the targeting of the MGNREGA is universal for rural households. This is important when it comes to the uncertain impact and distribution of climate change.

The faith in passing an equitable and efficacious global treaty on climate change has been fading for some time (Bojanowski, 2012). Resources made available for climate change adaptation remain negligible and provide only a limited set of financial/technological benefits which are still not commensurate to present-day needs. In this scenario, independent, domestic adaptation is assigned a more pivotal role. The MGNREGA, in theory, assumes the role of a domestic effort that functions outside the realm of international climate finance. At the same time, linking it up to future treaty architectures, such as REDD + or Green Climate Fund, is a possibility.

4.2. *Weaknesses*

The strengths and opportunities that the MGNREGA offers are numerous and satisfy different criteria related to process and outcome of sustainable adaptations. Still, there exist a variety of weaknesses and potential pitfalls. Above all, the MGNREGA was never intended to achieve adaptation outcomes. At no point is climate change or adaptation mentioned as an objective in the original act. It was only recently that the adaptation components have been acknowledged and connected to NAPCC and National Communications. This incidental overlap of development and adaptation outcomes is termed as 'serendipitous' adaptation (McGray et al., 2007). Optimally the proper application of a climate lens to a sectoral policy has to entail a revision and incorporation of methodologies relevant to adaptation. Such a revision should identify and incorporate processes (see Figure 2) that distinctly gauge out vulnerability to climate change in different localities, the degree of risk it poses, whether measures taken could have undesirable consequences on vulnerability patterns and an evaluation of different measures to better address climate risks or opportunities (Lebel et al., 2012). This has not been undertaken so far.

In the absence of a serious understanding and application of a climate perspective the scheme runs risk of instituting maladaptations (for example construction of rural roads in areas prone to landslides or leaving dry areas exposed to soil erosion) and not moving beyond the stage of a mere 'serendipitous' adaptation programme.

Even if this perspective is applied, there remain doubts on efficacy. The sum total allocated to the MGNREGA amounts to approximately $8–9 billion (MoRD, 2012). A total of 626 districts are covered and more than 50 million households registered. This means that there is a relatively thin spread of resources which puts caps on impact and effect. Demands for budgetary allocation have

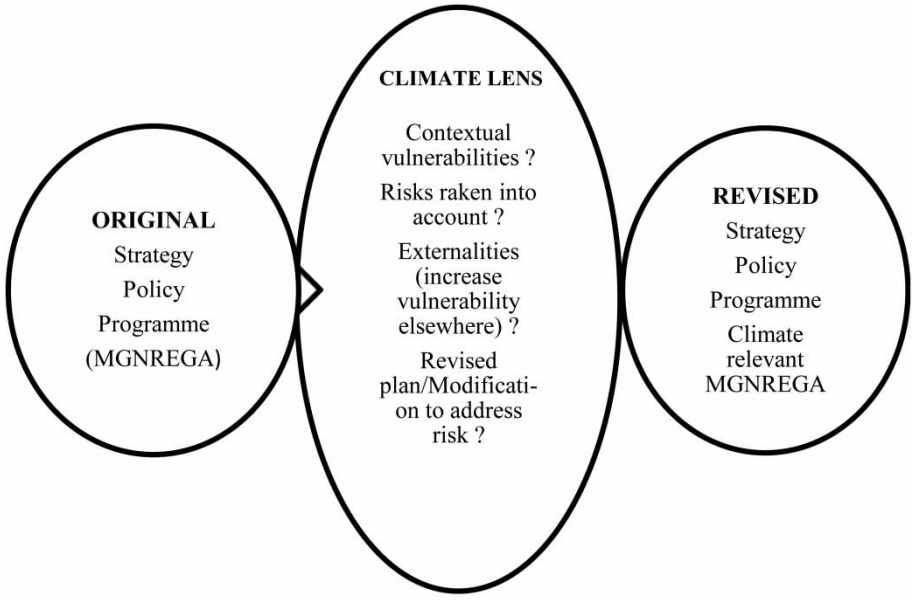

Figure 2. Climate lens methodology through which a mainstreamed programme passes (adapted after Lebel et al., 2012; Organisation for Economic Co-operation and Development [OECD], 2009).

stabilized or reduced over the recent past and there appears to be a declining trend in household participation at an aggregate level and also in the average number of person days generated in the period from 2009–2010 to 2011–2012. Similarly, the number of works taken up and completed has worsened (Jha & Gaiha, 2012). This deterioration of key parameters has not been entirely understood but points to fledgling governance performance.

Efficiency considerations pose a related question mark. The relationship between costs and benefits, inputs and tangible output (in terms of productivity enhancement) remains hotly debated. Some critiques describe the MGNREGA a 'make work' (Gupta, 2011) scheme and its public works 'being washed away the next monsoon' (World Bank, 2011) while other studies testify to the usefulness of assets created (Aggarwal et al., 2012; Esteves et al., 2013) and the positive role they play in vulnerability reduction (IISC, 2013). Other shortcomings relate to unresponsiveness of local administration, corruption, unexplored externalities, absence of integrative planning and management, as well as lack of technical staff. Delays in wage payments are one of the most serious aspects that obstruct the programme from achieving its basic goals (Ambasta et al., 2008; Comptoller and Auditor General of India [CAG], 2013; Khera, 2010; Vanaik & Siddharta, 2008).

A crunch here lies in the dearth of broad based, longer term interdisciplinary studies that can give more conclusive and accurate insights on a wider scale, and in-depth case studies that look holistically at the relationship between vulnerability and the MGNREGA.

The Indian Prime Minister (in the lead up to the Rio 20 + conference) and officials from government departments have stressed the efforts that India is undertaking in compliance with UNFCCC-mandated propositions to mitigate climate change. In the same breath, the MGNREGA is an argument put to political use (Bidwai, 2012). The dilemma therein lies that the government can use the scheme as a 'front' to deflect from the necessity of change to its wider development model which is carbon centric and set to substantially contribute to the earth's CO^2 emission volume. Simply put, 'hiding' behind the poor and pointing to resources earmarked for adaptation purposes can have undesirable consequences when wider questions in the development–climate nexus are posed.

Lastly, structural vulnerabilities prevalent in various sectors remain unaddressed. The MGNREGA is not transformative but remains a policy tool that works within existing social and economic frames. More radical questions such as land reforms, changing labour relations, creation of markets or technological diffusion are not posed and possibly even muffled by pointing to the functioning of an existing anti-poverty scheme. In addition, there is a danger that the scheme locks communities into present-day development patterns and stifles innovation and change. In short, dependency could be encouraged. This is a disincentive for adaptation. Change adverse behaviour has undesirable side-effects on communities if they remain in a climate vulnerable area without actively engaging with its precincts. For example, if and when climate stress exceeds the coping capacity of the place it can leave the remaining community in an even more vulnerable state.

5. Conclusion

India's MGNREGA offers an interesting case of a PWP that also assumes the role of a policy tool for climate adaptation. Even if not initially intended to, and despite a number of functional and methodological shortcomings, conceptually it satisfies a range of normative benchmarks that frame mainstreamed adaptation. It sources its attractiveness from its focus on vulnerability issues of India's rural population, the clarity of governance structures, inclusionary delivery mechanism, flexibility and applicability across a diverse rural landscape. Furthermore, it is feasible and perceived as a legitimate intervention by the state. On the other hand, it cannot be forgotten that India exhibits a legacy of well-intentioned policy that often failed to achieve stated aims on the ground. The MGNREGA, though better designed, is not immune to factors that jeopardized past efficacy. Marked weaknesses that have been documented to date relate to the potential for political misuse, governance issues like corruption, integrated planning and co-ordination, problems with key performance indicators and doubts over the quality and purposefulness of assets.

Its full potential as a tool for adaptation has not been harnessed so far and it is merely 'serendipitous' adaptation that is practised. Transforming the scheme to perform more meaningful climate adaptation requires the consolidation of existing and input of additional empirical (interdisciplinary) research findings, a gauging out of opportunities (for instance convergence with other schemes) and modification of procedures and processes that incorporate a climate lens perspective. This should include awareness raising, integrating contextual vulnerability assessments, screening of appropriate projects and an associated planning reform to address drivers of climate vulnerability more sustainably. Given the lack of viable programme alternatives that operate at the scale that the MGNREGA does and the vulnerabilities that swathes of rural population encounter, this assumes additional significance.

PWPs have been part of India's development map for more than four decades and will continue to be so in the foreseeable future. The experience made and lessons learned, now also from a climate perspective, can be put to use in India and other developing countries with similar programmes. Learning and incorporating these experiences can help provide a blueprint when drawing up new or modifying existing programmes that serve similar purposes. Even though they do not challenge existing development trajectories and fall short of taking on a transformative role, such programmes can become part of a multi-pronged strategy to address livelihood concerns of climate vulnerable communities.

Notes

1. Starting point and end point approaches represent the two central interpretations of vulnerability, the latter sees vulnerability as a more linear process that calculates it as the residual impact after adaptations have been undertaken and the former a dynamic condition with processes that can be altered and modified at present to be able to better deal with future climate conditions (O'Brien et al., 2007).
2. The entire labour cost and 75 percent of the material cost is borne by the federal government.
3. Costs for assets are divided in a mandatory 60:40 wage-material ratio.
4. The sustainable adaptation concept contains principles for adaptation that acknowledge: multiple stressors, local knowledge, different values and interests and connections between local and global concerns.

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PAPER 2

Mainstreamed adaptation in practice: India's MGNREGA in Attappady Block – a case study

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Abstract. *The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is one of the world's largest public works programmes and forms a core part of India's anti-poverty strategy. Recently, it has also been identified for its role and use in domestic climate adaptation. This paper examines the adaptation role that the scheme adopts through analysis of empirical data from Attappady Tribal Development Block, in the state of Kerala. It argues that the scheme plays an important role in reducing proximate vulnerability patterns and enhancing coping mechanisms but fails to precipitate more transformational changes.*

Keywords: mainstreaming, adaptation, rural development, India, MGNREGA, social protection

1. Introduction

Climate variability and change impose a myriad of challenges to livelihoods of communities across the globe. While those arising out of climate variability are not new per se, they are set to increase in intensity and impose additional burdens on already vulnerable population segments, particularly those located in rural areas of the global South (Adger & Vincent, 2005; IPCC, 2007). These communities tend to be economically dependent on climate-related services, politically disenfranchised and socially marginalised. Adaptation of social, economic and ecological systems to changing climatic conditions is an imperative to ensure their wellbeing and meeting basic needs in a changing climate (IPCC, 2014). A burgeoning literature on adaptation testifies to the heightened attention this subject has received from both academics and policymakers. (IPCC, 2014; Pelling, 2011).

Nevertheless, the implementation of adaptation policy has been lagging behind and continues to be marred by delays and shortcomings. The impediments range from resource scarcity and a low level in national policy priority, to conceptual ambiguity on how to design effective and viable adaptation interventions that meet normative requirements for equitable and effective action (Lebel , Li & Krittasudthacheewa, 2012; McGray, Hammill & Bradley, 2007). As an immediate response, the concept of mainstreaming adaptation policy has gained traction (Klein, 2011). To a large extent, in developing countries, it seeks to harness synergies between existing poverty alleviation programmes and associated principles in adaptation thinking, such as local institution-building (Richards, 2003). Mainstreaming is defined here as climate concerns and adaptation responses are integrated into relevant development policies, plans, programs, and projects at the national, sub-national, and local scales.' (USAID, 2009:12). It acknowledges the existing constraints that limit the scope and impact of present-day adaptation policy and attempts to circumvent some of these by integrating development and adaptation policy onto a common platform.

India's climate policy has started to follow up on this integrative approach. Its communications to the United Nations Framework Convention on Climate Change (UNFCCC), namely the National Action Plan on Climate Change (GOI, 2008) and National Communications (MOEF, 2012) highlight the significance of existing social sector programmes for purposes of adaptation. Among

these, in the latter document, the MGNREGA is explicitly listed (NREGA, 2005). It remains at the core of India's social protection agenda today and is also one of the largest public works programmes in the world. Its *raison d'etre* can be traced to the recognition that concerted public action is an essential means to remedy, or at least alleviate, some of the most pressing needs of the population, such as ensuring nutritional security and combating other manifestations of extreme poverty (Dreze & Sen, 2013).

The MGNREGA covers all rural areas and guarantees households at least a hundred days of unskilled employment against a minimum wage, if they demand employment. This labour power is then mandated to be harnessed for construction of productive assets that leverage rural development activities. A few years after its passing, the scheme entered the climate change adaptation discourse as well (Bidwai, 2010; Adam, 2014).

Synergies between social protection and adaptation have started to be explored conceptually and theoretically, also with respect to the MGNREGA (Huq, Reid & Murray, 2004; Davies, Oswald & Mitchell, 2009; Adam 2014). On the other hand, to the best of my knowledge, an in-depth empirical analysis of the scheme and its adaptation role from a contextual vulnerability perspective has so far not been undertaken.

This paper is an attempt to contribute to the debate through a case study of the scheme in a tribal development block[1] in south India. It draws on primary and secondary data, collected from Attappady Block in Kerala State and investigates the role that the MGNREGA assumes in addressing vulnerability patterns and mediating climate adaptation. Findings are hoped to contribute to discussions in the development-climate policy domain.

2. Conceptual framework

The terms 'development policy', 'adaptation' and 'vulnerability' are widely used but acquire different meanings depending on usage, context and theoretical understanding. Within the broad realm of development policy, social protection – by means of institutions and attendant mechanisms – is concerned with protecting economic and social rights, livelihoods and promoting

opportunities of groups that are poor, dispossessed or marginalised (Devereux & Sabates-Wheeler, 2004). Its policy goals include alleviating chronic poverty, promoting empowerment and reducing inequality. As part of an adaptation strategy, it attempts to reduce the vulnerability of individuals, groups or communities to a host of risks (including climatic variability) that presently and prospectively pose a threat to livelihoods. Depending on the strategic goals enunciated, designs can serve different functions that range from simply preventing livelihood collapse (through cash incentives) to tackling structural factors that enable recovery from shocks and livelihood transformations, such as re-calibrating power relations for example (Davies, Oswald & Mitchell, 2009).

From an adaptation perspective, the concrete forms it takes are contingent on what is understood to make a people or a system 'vulnerable' (O'Brien, Eriksen, Nygaard, & Schjolden, 2007). At the centre of this debate lie strands of thought that share the common purpose of discovering the 'heart' of vulnerability (Ribbot, 2010) but place varying degrees of emphasis on either physical or social causality (Fussel & Klein, 2006; Ribbot, 2010). Approaches focusing on livelihood (Chambers & Conway, 1991; Ellis, 2000) and entitlement (Sen, 1981; Sen & Dreze, 1989) frame vulnerability by bringing social factors and their context to the fore. Entitlement failure, loss, depreciation and degradation of asset bases (in the form of various capitals) are understood to lead to conditions such as hunger, famine and reduced wellbeing. Here, biophysical factors are not ignored, but are placed as one among a set of factors that contribute to vulnerability. Conversely, risk hazard approaches (Burton, Kates & White, 1993) place the burden of analysis and causality on the impact of singular climatic events such as droughts, floods, heat waves and subsequent livelihood outcomes.

Integrative approaches trace their origin from social constructivist positions (Ribbot, 2010) but attempt to bridge the conflicts between the two interpretations by disaggregating the causality of vulnerability to specific conditions that are embedded in the units of analysis and risks inherent in them (Fuessel, 2007; Turner et al., 2003; Watts & Bohle, 1993a,b). Watts and Bohle (1993a,b) use the term 'spaces of vulnerability' to describe these units of analysis and the multidimensional factors that generate risks to livelihoods. These are formed in a given spatial unit by a triad

composed of entitlement failure, disenfranchisement and class relations (the latter allowing for processes of marginalisation to relate to ecological and geographical factors).

This paper acknowledges both social and biophysical aspects of vulnerability and finds Watts and Bohle's integrative approach a suitable frame of analysis for this research. It also directs the study and understanding of policy for adaptation purposes. Vulnerability, by extension, is seen from a contextual perspective as a starting point to build up adaptive capacity[2] , which in turn mediates adaptation action (O'Brien et al., 2007). Adaptation policy here builds on the idea that causal factors of vulnerability need to be tackled at the outset to build up capacities among communities in order to institute adaptations. In other words, in order to brace communities for unpredictable environmental change, present-day vulnerability has to be addressed first. In this process, the framing of vulnerability focuses on fundamental conditions that place a certain section of the population at a disadvantage. These conditions are found in socio-political, economic and cultural realms and are connected to bio-physical processes. Rather than being a definite state, vulnerability is understood as a dynamic process. This 'pro-poor' framing holds particular significance when designing programmes for those who are ill-equipped to deal with prospective changes: the displaced, landless, indigenous populations, subsistence agriculturists and the poor. They may lack stable income, suffer from ill-health and nutritional deficiencies, and have limited access to basic goods, services and stable social networks. Consequently, they are more susceptible to exhausting their ability to address additional livelihood stress that arises directly and indirectly as a result of environmental change. Once their immediate coping capacity is exceeded, they are highly susceptible to be pushed below a minimum livelihood threshold that threatens survival, wellbeing and impedes the ability to recover.

Development policy, when viewed from a mainstreaming perspective and approached from a contextual vulnerability point of view can prepare communities to cope with and adapt to current and future climate vagaries. This is possible if inequality is reduced, present-day climate variability addressed, malnutrition tackled, marginalized groups are provided with an avenue to participate in mainstream activities and so on – regardless of uncertain climate modelling and future predictions which are emphasised in other understandings of vulnerability and policy (O'Brien et al., 2007).

On the other hand, it has to be kept in mind that if such a policy approach is followed in a business-as-usual fashion, it might fail to tackle specific threats emanating from climatic changes (Eriksen & O'Brien, 2011; Eriksen et al., 2011). Ribot (2010:63) highlights the importance of case studies in the process of informing policies and their impacts on states of vulnerability as follows: 'Responses to vulnerability must be developed from detailed understandings of specific problems in specific places. Case studies inform us of a particular set of dynamics and opportunities for vulnerability reduction in a particular place'. In other words, policy action has to incorporate a variety of issues entrenched in the political economy of an area, be responsive to local development needs and also acknowledge new challenges emanating from climatic changes. Eriksen et al. (2011) synthesize some of these concerns in the sustainable adaptation concept[3].

The MGNREGA, in its existing form, seeks to reduce vulnerability by focusing on social inclusion, legal right and provision to work, creating productive assets and strengthening local institutions (MoRD, 2013). The 'spaces of vulnerability' (Watts & Bohle, 1993(a),(b)) touched by these objectives are multiple and can relate to geography, ecology, entitlement, empowerment and political economic conditions.

Against this backdrop, the central questions that this paper poses are:

1) How and to what extent does the MGNREGA exercise influence on variables that are relevant for vulnerability reduction and adaptation action?
2) What socio-economic impacts and outcomes can be discerned, especially for the most vulnerable population sections?
3) What relevance do these findings hold in the context of mainstreaming in India?

3. Research methodology

The research design of this paper is framed by a case study and relies on multiple methods to investigate the three research questions. This design was chosen to provide an in-depth account of Attappady Block and the nuances of the functioning, impacts and perceptions by participants of the MGNREGA within the given development conditions.

Primary data collection was carried out using semi-structured interviews, focus group discussions, interviews with key informants and participant observation, in the sense of observer as participant (Matthews & Ross, 2010). Secondary data sources complement this data set and comprise a literature review of newspapers, reports, articles, books and publicly available statistics on the MGNREGA. The researcher collected the main body of primary data (being the semi-structured interviews) between November 2011 and April 2012. A second stint of data collection between December 2012 and February 2013 included additional interviews with key actors and focus group discussions. In February 2014, worksites which had been under development and surveyed in the first fieldwork period, were visited again.

The indicators used in this paper were selected based on their relevance in a vulnerability–adaptation context and distilled from diverse literature (Adger, 1999; Agrawal et al., 2012; Eriksen & O'Brien, 2011; Fuessel, 2007; Lemos et al., 2013). These comprise socio-economic data on gender, income, employment, literacy, ethnicity, access to land and its use and physical aspects related to asset construction. Perceptions about the MGNREGA, its use, impact and outcomes – specifically with respect to these indicators – were recorded. Findings thereof are classified into three categories that pertain to employment, assets and incomes.

In total, 190 respondents who were actively engaged in MGNREGA work over the 2011–2012 period were interviewed through semi-structured interviews. In the vast majority of cases, collection of this data was undertaken at 40 different worksites located in Attappady from which respondents were randomly selected. To ensure a high degree of representativeness, the sample size was stratified according to the population number in the respective gram panchayat (village administrative unit). Forty-eight per cent of the respondents were chosen from Agali, 23 per cent from Pudur and 27 per cent from Sholayur. Apart from participants, key actors from the administration and civil society organisations (Kudumbashree, Local Development Units, Tribal councils) were interviewed. This set includes 25 key informant interviews that were loosely structured around an interview guide were conducted. The analysis of the questionnaire data was performed using descriptive statistics and supplemented by qualitative analysis.

4. Background and context

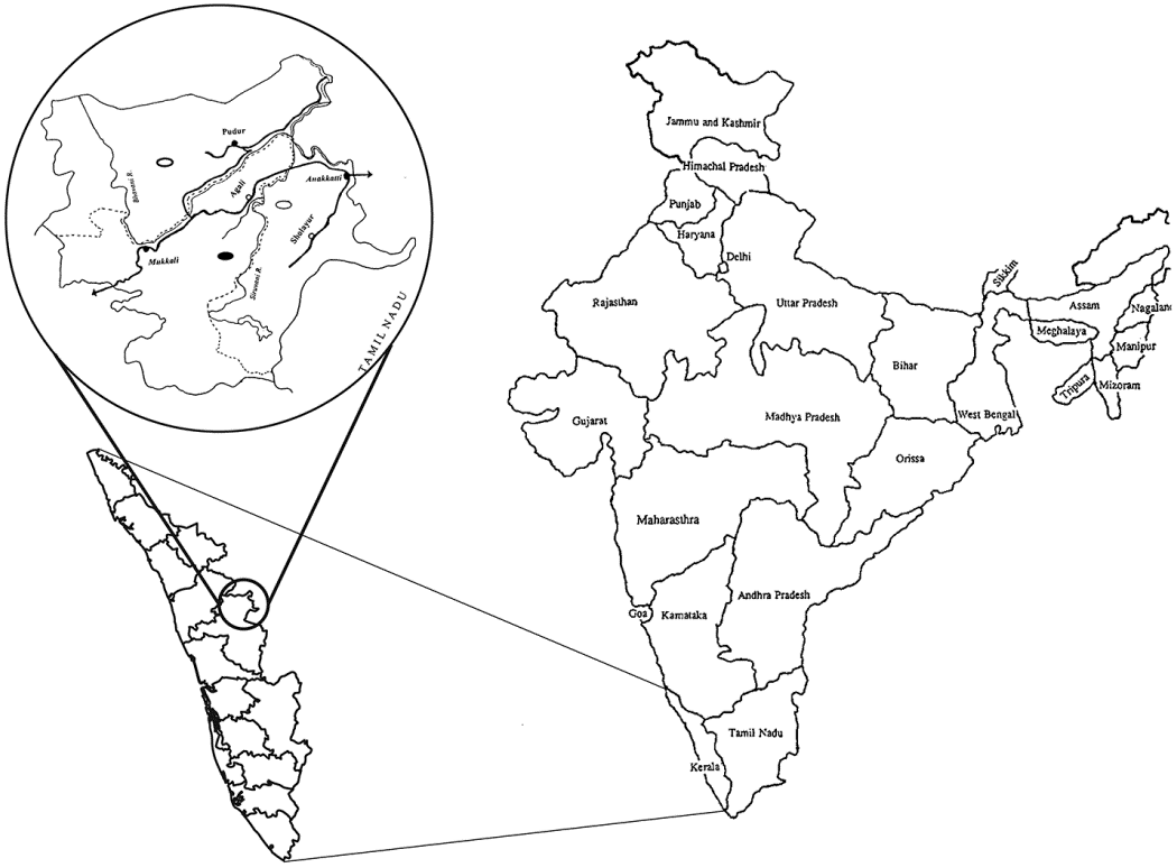
4.1 Physical and ecological conditions

The site of this case study is Attappady Block, located in Palakkad district. It is a tribal development block in the south Indian state of Kerala and falls under the Nilgiris Biosphere Reserve in the Western Ghats mountain range. Formed in 1962, it was given special status by the state on account of the distinctive development conditions found in its tribal life and economy. It consists of three panchayats; Agali, Pudur and Sholayur which span an area of 745 square kilometres and hold a population of 69,723 people (GOI, 2014).

Precipitated by its topography, geology, geographic location and climatological patterns, the physical landscape of Attappady plays host to a complex and diverse ecology (Sathis, 1989; Muraleedharan, Sankar, Pandalai & Chacko, 1991; Sathis, 1989). The plateau on which it rests is eastward sloping and nestled by mountain ranges to the north (Nilgiris) and south-west (Siruvani hills). The terrain is undulating and ranges in elevation from 550 metres to more than 2,200 metres. Its western parts can receive heavy annual rainfall of 3,000 millimetres or more while its eastern parts are characterised by the dependence on the retreat, north-eastern monsoon, and are more arid with annual precipitation normally below 1,000 millimetres (Radhakrishnan, 2012). The majority of the settled population is located around the lower valleys of Attappady. A number of rivers and rivulets drain and distribute water across the Block, Bhavani being the most important.

Agriculture is the mainstay of the economy. Banana, coconut, arecanut, sugarcane, rubber and rice are the main crops cultivated in the valley bottoms and coffee, tea, pepper and cardamom in the higher hill ranges. Traditional tribal agriculture is mainly rain-fed and composed of millets, oilseeds and pulses.

Figure 1. Attappady map



Source: Adapted from Velluva (1999)

4.2 Decades of change

Attappady's socio-economic profile, political landscape and ecological conditions have undergone dramatic changes over the past few decades. In 1951, the Block was predominantly (90%) inhabited by tribal communities (alternatively termed as 'Adivasi') composed of Irula, Muduga and Kurumba tribes. They were traditionally engaged as hunter–gatherers, subsistence agriculturists and shifting cultivators. In the absence of market integration and limited state presence, social and economic structures (including welfare provisions) were mostly informal and represented a form of moral economy (Menon, 1996; Booth, 1994). Significant changes started to take place from the 1950s onwards. Driven by push factors (poverty, land scarcity) and pull factors

(cheap land, labour, conducive policy) in the plains of Kerala, Tamil Nadu and to some extent Karnataka, the Block witnessed a rapid influx of settlers (Velluva, 1999). By 1981, the tribal communities comprised only 33 per cent of the population. Developments that acted as harbingers of change were the rise of regional industrial centres, integration into a market economy, demographic shifts, introduction of industrial farming practices and policies by the government. These acted as catalysts for changes in ecology, natural resource-based quality, land, production and social relations as well as social and cultural institutions (AHADS, 2010; Kunhaman, 1981; Muraleedharan et al., 1991; Prabhakaran, 2013; Sathis 1989).

Clearing of land for agricultural purposes, demand from the commercial timber industry and the absence of effective protective legislation, led to rampant deforestation and land degradation. In conjunction with the alteration of river flow regimes, these affected micro-climates. New economic structures gave rise to a laboured wage class and tribal land was usurped. Government interventions did not halt these processes, but indirectly encouraged them.

Between 1951 and 1971, it is estimated that forest cover declined from 82 per cent to 28 per cent (Kunhaman, 1981), and up to 60 per cent of the land was classified as wasteland by the mid-1990s (Takaki, 2012). A fall in precipitation was observed all over the Block, especially its eastern parts, after the 1970s (Sathis, 1989). Other feedbacks manifested themselves through increased frequency and intensity of storms, droughts and extreme temperature differences (Radhakrishnan, 2012). Additionally, Palakkad district is classified by the State Action Plan on Climate Change (SAPCC) as one of the two districts of Kerala that are 'very highly vulnerable' to climate change, with temperatures in the Western Ghat ranges projected to rise between 2 to 4.5 Celsius by 2050 (Nandakumar, 2014).

Tribal communities were progressively reduced to a 'voiceless' minority that suffered from deeply entrenched discrimination and exploitation by emergent elites (Prabhakaran, 2014; Shaji, 2014). Traditional agricultural practices were adversely affected by loss of effective control of large tracts of customary landholdings, changing climatic conditions, natural resource base degradation, uncompetitive economies (wage rates, productivity, market integration) and the progressive collapse of associated social and cultural institutions (Muraleedharan et al.,1991; Haseena, 2006).

According to the last authoritative government report of 1982 on land alienation, 63 per cent of tribal agricultural land was usurped (see D'Roazario, 2013).

Adaptation to this changing context and integration into mainstream economic life proved difficult with unemployment, poverty and illiteracy remaining disproportionately among the tribal communities (Velluva, 1999, Haseena, 2006). Abject poverty is rife with more than 70 per cent of the tribal households holding below poverty line cards (KILA, 2008). As late as 2013, a number of infant mortalities were reported (Ittyipe, 2013). A recent research study regarding the Human Development Index ranked tribal communities well below the average of Kerala state and at the bottom compared to the Human Development Index value for other states in India (Sujith, Reejo, Dhanush & Scaria, 2014).

A complex picture of vulnerability emerges. The tripartite forces of entitlement failure (market integration, lack of access to resources, demise of informal economies), disempowerment and emergence of class relations (production relations, exploitation) in combination with increased exposure to environmental risks left the tribal community highly vulnerable. Legal initiatives (land and forest protection legislation) and development schemes were instituted over the years but not documented to significantly arrest or reverse these trends (Suchitra, 2013).

5. The MGNREGA and Attappady

The MGNREGA was introduced across India in three phases from 2006 to 2008. It is demand-driven, follows a rights-based approach to employment and has inbuilt legal mechanisms that aim to guarantee entitlement provision (GOI, 2005). Its overarching goals are the provisioning of employment (at least 100 days), creation of productive assets, augmenting of livelihood bases and strengthening of the local administration known as Panchayati Raj Institutions (MoRD, 2013). Activities carried out to pursue these goals fall into categories that respectively concern themselves with natural resource management, special provisions for development activities in the case of particularly vulnerable people that is scheduled caste (SC), scheduled tribes (ST), women, below poverty line, rural infrastructure and projects related to agricultural development. Wage rates are

defined according the Minimum Wages Act of 1948, and vary from state to state. The formal process of planning and decision-making rests with administrative line departments but it attempts to be inclusive and participatory by emphasising the role of the lowest tiers in the system (grama sabhas) and their connection to civil society development organisations such as watershed development units or self-help groups. Transparency efforts include the screening and disclosure of all MGNREGA records to the public.

Figure 2 Decision making process of the MGNREGA in India

Level	Process	Function and Role	Provisions
District	Approves budgets	**District Programme Coordinator** - Integrates Block level plans - Prepares mid to long term plans - Approves central budgets	
Block **(Development unit)**	Monitors and ensures provisions have been followed	**Block Programme Officer** - Prepares shelf of Project - Monitoring and supervision as well as consolidation of plans - Technical assistance	
Gram Panchayat **(Village office)**	Consolidates, monitors and allocates resources	**MGNREGA Desk** - Handling applications and formalities - Consolidation of Grama Sabha plans, - Planning and execution of works - Technical assistance	
Grama Sabha **(Village Council)**	Forwards local development plan and works for approval	**Village council meeting** - Consultation and discussion on works issuing works, - Social audit	50 % of the budget for works should be executed in the jurisdiction of the GS
Household	Submits application	**Demand for work** - participation in local level discussions - demand for employment and private land development	- Within 15 days of application - Assigned to relevant project in locality - Can apply for work on own homestead

Source: MoRD (2013)

A number of research studies have been instituted over the years that examine the schemes social, political, economic and institutional aspects (see for instance Khera, 2011; Viswanathan, Mishra, Bhattarai & Iyengar, 2014; Shah, Mann & Pande, 2012; Ghose, 2011). While these studies

highlight the beneficial socio-economic effects on rural wellbeing, they sound notes of caution and reveal challenges related to its implementation, especially with respect to governance issues such as corruption, programme delivery and disparate regional performance. Tiwari et al. (2011) and Esteves et al. (2013) more recently report positive impacts on vulnerability reduction by enhancing ecosystem service flows and augmenting livelihood bases. However, critical commentators claim that the scheme is 'promoting dependency and idleness and destroying the work ethic' (Choudhary, 2011).

In Attappady Block, the scheme has been the most significant development intervention over the study period. The empowerment and socio-economic upliftment of the tribal communities is one of its prioritised policy goals and was further formalised through an action plan in 2011 (The Hindu, 2011). The key economic sector identified for this is agriculture. Activities related to its extensive and intensive development, are of prime concern in resource allocation. Development of fallow tribal land for agricultural activities is viewed as a first step in this strategy and has been documented by the bureaucracy as being fairly successful (Prabhakaran, 2013). A total of 25,750 acres of tribal land have been designated for this; initially (during 2010–2011), the action plan included 3,344 acres. The scheme seeks to: (i) reclaim fallow, underdeveloped, tribal community land as well as adjunct commons land for cultivation and development activities, (ii) enhance the productivity of existing, cultivated land, primarily belonging to tribal families, (iii) provide remuneration and employment to tribal communities for tending to their own land, and (iv) present an entry point for convergence with other governmental programmes. Private land holdings other than those belonging to tribal communities (for instance, those owned by small and marginal landholders), can only be developed after projects and works for the primary, intended beneficiaries have been exhausted or are not feasible in a panchayat or ward. Other notable features are that the Kudumbashree is the nodal agency which serves as the first point of contact for villagers, and that contact persons for planning and implementation of works at tribal hamlets are from their own community.

6. What does the data tell us?

Findings are classified into categories that pertain to employment, assets and incomes. Data on employment provides clues to socio-economic and temporal distribution of benefits and how questions of social justice, access to entitlements and seasonal fluctuations are tackled.

The second significant aspect pertains to physical asset creation. This has the following direct and indirect impacts that are relevant to development and adaptation: i) provision of enhanced ecosystem services and resource availability to local communities that raise adaptive capacity and smoothen seasonal fluctuations; ii) elements of disaster risk reduction by building physical defence structures against present and anticipated extreme climatic events; iii) infrastructure projects that promote other economic developments. Finally, the use of MGNREGA income and the scheme's occupational significance for households is examined.

These indicators are not all-encompassing but provide pertinent and comprehensive pointers that connect to and allow insights on the development–vulnerability–adaptation debate. Initially, the figures provided through official statistics are examined. While extensive, these are not exhaustive since undercurrents anchored in the political economy of Attappady, such as social relations, are insufficiently represented. In an attempt to uncover these undercurrents, secondary data analysis is substantiated by semi-structured interviews, and by participant observation by the researcher and interviews.

(i) Employment

Composition and employment provision

Of the total 16,724 households, 9,967 were registered with the MGNREGA, the largest proportion coming from the 'general'[5] community. Of these, 7,976 were actually provided with employment, with the tribal communities making up 3,872 (48%) of the participating households. A slightly higher share compared to their representative population in the Block. Of the respondents, 75 per cent had below poverty line cards.

On average, 47 days of employment were provided, at a prevalent wage rate of 180 Indian Rupee (INR) per day. The tribal population received 44 days, SC 42 days and the general community a slightly higher 51 days on average. Less than 10 per cent of the total households received 100 days of employment. This is considerably less than the officially available 100 days of employment for households but is commensurate with the average days of employment for Kerala state as a whole, where an average of 45 days were provided. Migration is highlighted in the vulnerability literature (Chambers & Conway, 1992) as a potential means for livelihood diversification and MGNREGA employment provision does not appear to disincentivise it. Only 10 per cent of the respondents stated that they would migrate in the absence of the scheme's employment provision.

Despite indications that it is the tribal community which appears most in need of employment venues, its demand and provision do not reflect it to that extent. Respondents offered a variety of reasons for the lack of employment demand and provision such as: the remoteness of some hamlets, apprehensiveness about participating in state-sponsored schemes, delayed wage payments under the MGNREGA, lack of information and awareness of how and when to apply for job cards, a sense of discrimination when dealing with the administration, and the need to perform labour on homesteads, cater to family responsibilities or engage in alternative work on private farms. On the other hand, they expressed their hope, now that work is taking place on tribal lands it will be easier for them to get employment in future.

Seasonal fluctuation

Smoothing out the negative effects of seasonal climatic variations plays a vital role in adaptation efforts. Usually, the dry season in Attappady lasts from February/March to May. Employment patterns indicate that between April and June, no employment is provided. This on account of administrative consolidation which involves documentation, tallying of accounts, preparation and consolidation of work plans. Finding other sources of remunerative employment during this lean period proved to be challenge for respondents. Instead, households had to rely on intermittent employment, savings, loans and support from social networks for sustenance. It is likely that demand would be significantly higher if work possibilities existed during this season. During the fieldwork year, Attappady experienced drought-like conditions and respondents stated that the MGNREGA, in general, helped fill employment gaps due to the lack of demand for agricultural labour.

Gender

Women benefitted particularly from the scheme and in total made up 91 per cent of the MGNREGA-generated person-days. The most positive aspects they perceived were the provisioning of employment, working in groups and opening of savings accounts. A total of 115 (61%) of the interviewed respondents opened a bank account for the first time to receive MGNREGA wages. Eighty of these 'first-timers' (70%) belong to tribal communities. Thus, one of the most vulnerable population sections has been provided with an avenue for financial inclusion and medium of access to other credit sources. Along with this comes a degree of empowerment and enhanced ability to meet a set of basic livelihood needs autonomously. Reasons for the high participation rate of women can be found in the mobilisation efforts by female-centric Kudumbashree units and lack of other remunerated employment opportunities. Men prefer other jobs, because wage rates for them are significantly higher within the agricultural and other sectors of the economy (ranging between INR250 to 500 per day). Additionally, a stigma is attached to the scheme, which perceives the scheme's activities as being 'too light for healthy men' but rather suiting women or the perceived weaker members of society.

Age-wise composition

Table 2. Age wise composition

	Age-wise registered and employed persons									
Age group	18-30		30-40		40-50		50-60		Greater than 60	
	Registered	Employed	Registered	Employed	Registered	Employed	Registered	Employed	Registered	Employed
	5297	1535	6524	3119	5252	2662	3245	1610	1899	802
Participation rate	29 %		48 %		51%		50%		42%	

Source: NREGA (2012)

As can be observed in the table above, younger people in the age group of 18–30 demanded considerably less employment than other age groups. Their participation rate (employment demanded as proportion of people registered for employment) lay at 28 per cent. This suggests a

lack of incentive and interest, together with the availability of more remunerative employment opportunities for them, including migration. Age groups from 30 onwards exhibited a participation rate hovering around 50 per cent.

People who suffered from ill health and older age groups (50 plus) were more motivated to apply for employment as it provided them, oftentimes, with the sole source of gainful employment. Geographically, this applies more to the eastern parts of Attappady (Pudur and Sholayoor panchayats) where the participation rate for this age bracket was 65 per cent and 52 per cent respectively. These areas have a higher share of tribal population and suffer from more stress, including poverty and unfavourable climatic conditions pointing to the important coping effect of the scheme.

Workers in the age group of 50 plus stated that they prefer MGNREGA employment for the 'ease of work', 'companionship of working in groups' and 'proximity to home'. This highlights the welfare aspects the scheme holds for marginal sections but poses a related question regarding productivity elements. On the other hand, the settler (general) community frequently termed the scheme as being 'easy work', 'a handout for the tribals, women and aged' and a welfare scheme wherein productivity and asset creation are secondary elements that motivate people.

(ii) Assets

Work categories

Table 3 provides a descriptive overview of the work categories in the financial year 2011–2012.

Table 3. Works executed 2011–2012

Type	Flood Control	Rural Connectivity	Water conservation and harvesting	Renovation of traditional water bodies	Drought proofing	Irrigation canals	Irrigation facilities to sc/st/iay/lr	Land development	Total
Distribution	184 (16%)	13 (1%)	53 (5%)	9 (1%)	11 (1%)	4 (.4%)	1	874 (76%)	1146

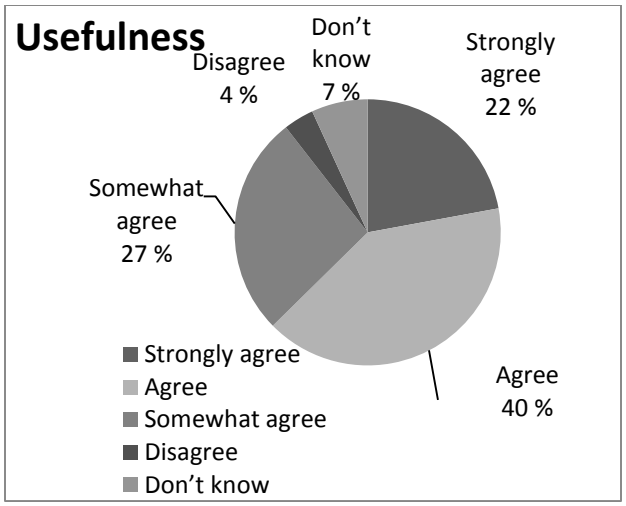
Source: NREGA (2012)

From the data it can be gauged that priority is assigned to an area that quite generally refers to 'land development'. These works are labour intensive, pertain overwhelmingly to agricultural land development and are also reflected in the expenditure pattern, wherein the lion's share of 576 lakh (lakh=100,000) INR (95%) is allocated to wage expenditure. These works involve levelling and clearing of land, tilling, weeding and preparing it for cultivation, with a dominant emphasis on facilitating tribal families to 'return to agriculture'. Categories that address climate hazards directly or indirectly have not been assigned priority; water resource development, flood protection and drought-proofing are comparatively marginal. Social forestry-related activities were absent. Besides taking measurements of work executed, evaluation of natural resource management interventions were not discernible at any worksite visited.

Asset construction and impact perceptions

It can be seen (Figure 2) that the majority of respondents agreed, to varying degrees, that the works instituted were considered useful. Nevertheless, this assessment should be treated with caution. Even while agreeing with this relatively broad assertion, respondents mentioned that the quality and lifetime of the assets have a tendency to be 'short lived'. They contended that material inputs were limited to a fraction of the total costs in the projects and that technical expertise of workers and planners was limited. Usually works are seen primarily as sources of employment and respondents did not want to pass 'negative judgement' in fear of possible adverse repercussions to the scheme's functioning and their role therein. In one location where makeshift road culverts were constructed on a *kacha* (dirt) road, a female respondent commented: 'We do this work at regular intervals, but after every downpour the culverts become dysfunctional so we have to do the same labour repeatedly – but it is a good way for employment generation'. This statement resonates with experiences in other work projects where participants lack ownership of the assets created.

Figure 2.



Source: Author

Of the 190 respondents, 54 (28%) reported having had work done on their land under the scheme at one point or another over the preceding six years. The major beneficiaries were 32 tribal households (66%) who stated that, in the absence of the scheme's incentives, it would have been more difficult to attempt cultivation. Thirty-two of the respondents found the assets to have a positive impact on either soil erosion, crop productivity, water availability or sanitary conditions. Eleven respondents reported having had work done on their land recently and still needing to 'wait and see for changes in the next season'. The remaining respondents did not report or were unaware of any perceptible changes. Some tribal respondents mentioned that without MGNREGA resources, they would not have started to engage in agricultural development in the first place. Non-tribal land development, especially of lands that larger than one or two hectares, has been a topic of discussion and a cause of resentment among the general communities, including participants of the scheme. The Block Programme Officer mentioned that he faced pressure to dilute regulations and allow more non-tribal land development, which he refused to do.

It can be seen that tribal cultivators are the principal recipients of sanctioned works on land. While the monetary incentive to develop the land, together with a potential increase in productivity, food production and income-generating opportunities were perceived as positive, these activities are essentially temporary in nature. Most activities are composed of light earthworks and are intended

for one growing season, following which it remains doubtful if restored land will be sown and cultivated again. In the absence of adequate extension services and market integration, this practice is unlikely to institute more underlying and enduring changes. Other services offered by the Integrated Tribal Development Programme (supply of seeds, pumps, electrification) are contingent upon the production of title deeds, demand for these services and timely provision. According to the Block Programme Officer, these are hurdles which seriously inhibit the long-term efficacy of the scheme. While tribal families are endowed with substantive customary land holdings, they often lack *pattayam* (land title deeds), without which the families cannot fully avail themselves of sanctioned state subsidies. In cases where tribal families did receive title deeds as part of land rehabilitation processes, they often do not know where the land is located, or else it is in areas where access and cultivation is very difficult. Another dimension is the scope of elite capture of land development works. Tribal land holders rent out or mortgage land for long-term leases against a pittance, which is subsequently used for cash crop cultivation by the investing party. MGNREGA resources are then used to develop the same. In one such case in Pudur panchayat, the researcher documented a family who rented out 10 hectares of land against a yearly rent of INR 500, which was subsequently used for banana cultivation by absentee landowners and developed through MGNREGA works.

In addition, existing climatic vagaries (dominantly a lack of seasonal rain in the eastern parts according to Radhakrishnan, 2012), land and labour relations, resource availability, skills and market fluctuations in the region and wildlife intrusion, inhibit agricultural development (AHADS, 2010). A brief visit by the researcher in February 2014 to survey five of the worksites that fell under tribal land development (terracing and land reclamation) in Sholayur and Pudur panchayats, confirmed the assertion that, in the absence of extension services – especially those related to water availability – no agriculture could be practised. The sites in question lay dormant two years after development.

Disaster risk reduction

In terms of asset construction activities since the scheme's inception and basic physical building blocks of disaster risk reduction against climate extremes and their central manifestations (drought, flooding, landslides), 110 respondents (58%) documented relevant protective works in their locality over the past six years. Thirty-eight respondents mentioned that works had assisted with

flood protection through construction of micro-check dams and culverts; 33 mentioned assistance against landslides by terracing and trenching. A further 36 respondents commented on assistance against droughts by bunds, ponds, tanks and irrigation activities. However, the quality, durability and effectiveness of works, especially those that require significant material inputs, remains doubtful with respondents not convinced about it.

Maladaption

While disaster risk reduction and other asset works can form part of adaptation activities, they are by-products rather than conscious efforts to reduce exposure to climatic risks. Maladaptation – that is, activities that increase exposure of communities to climatic events (Barnett & O'Neill, 2009) – were observed by the researcher in several instances. This can be illustrated by a road construction project that was intended to link two villages to a main access road in the western part of the Block in Agali panchayat. Construction took place by cutting through a hillock and relying solely on loose earthworks in an area that suffers from a high risk of soil erosion and landslides. The construction project was located along the flank of a hillock with a steep incline. Road construction progressed along this flank, located just above irrigation canals. In the event of intense rainfall (a regular occurrence during the monsoon period), loose earth would easily slip down and block these channels temporarily.

Similarly, under the guise of the MGNREGA, the mining of sand from streams and ill-planned earthern road improvement works were documented. While unintended, these instances illustrate a lack of sensitisation and awareness of the effects that poorly planned projects can precipitate on communities and infrastructure in the face of climate events. Part of the problem can be traced to the pressure placed on officials to sanction works (under threat of penalties) without prior study, and relates to lack of technical training that is imparted to mates (who are the nodal agencies and planners at the worksites) and technical assistants. Similarly, the technical assistants who help to plan and supervise works, are overstretched. For example, in Pudur panchayat, a total of five employees were involved in 261 work projects over a year. Officials interviewed at the block and panchayat level were unaware of climate change adaptation issues and were solely concerned with administrative directives that are embedded in socio-political demands heaved upon them.

Planning and assessments are not integrated with State Climate Change Adaptation Plans either, and no vulnerability assessments have taken place.

Regarding the asset quality component, officials dealing with the MGNREGA commonly refer to it as 'a welfare scheme', saying that 'work creation is prioritised over quality or lasting impacts, so we should not expect too much in terms of outcomes'. While there are some committed officials who actively pursue the scheme's objectives, generally there appears to be a lack of interest, understanding and commitment. A large number of state official working in the administrative division of Attappady come from outside the area and postings are understood to be a punishment. No members from the tribal communities were involved in mid and higher level bureaucracy.

(iii) Income

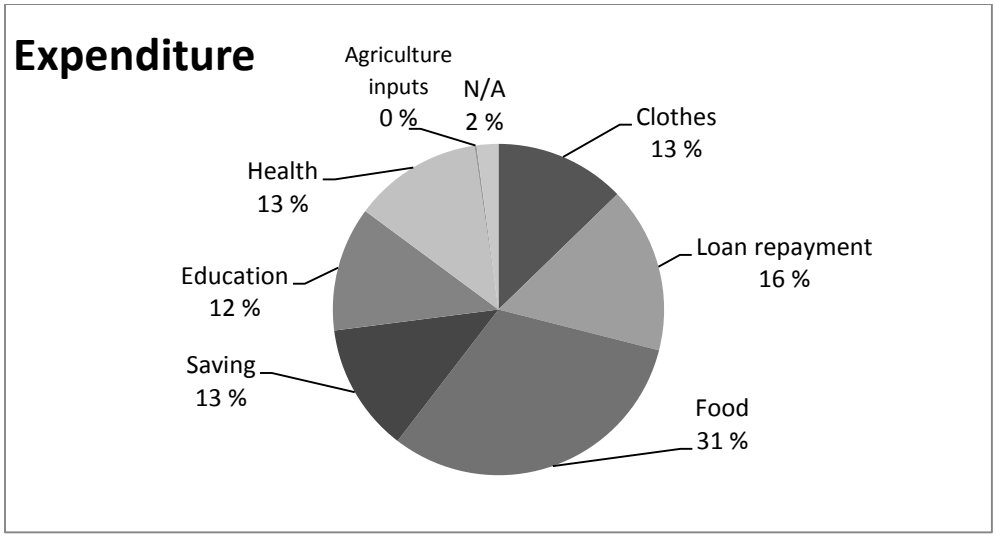
Occupational significance

For 88 of the respondents (46%), MGNREGA income constituted the primary occupation and individual source of income for the (respectively) past month. For members of the tribal communities, this income proved to be especially important. Of the 88 tribal respondents, 57 (64%) stated that it was their most important individual income source. During the agricultural off-season, and in the absence of casual employment opportunities, it served its safety net role and, at least partially, filled employment gaps. On the household level, 50 households (26%) reported MGNREGA wages as the main constituent of household income. For tribal households, this proportion rose to 31 (62%). Tribal respondents repeatedly confirmed that the income from the MGNREGA was one of their 'sole sources for sustenance', especially during drought periods and off-seasons. Even the presence of other government-sponsored initiatives (such as the public food distribution system) could not entirely substitute for MGNREGA's role in ensuring a degree of livelihood security.

Expenditure pattern

What is the income used for? Respondents were asked to name and rank their three central expenditure items. The following results emerged:

Figure 3.



Source: Author

Food (32%), debt repayment (16%), savings (13%) and clothes (13%) were the main expenditure items for respondents in this study. In terms of priority, 86 of the respondents (45%) ranked food expenditure as their first priority, of which 56 (65%) belonged to the tribal communities. This highlights the role that MGNREGA wages play in contributing to food security. For the general communities, repaying loans, health, education, clothes and savings were more important, which reflects their differentiated socio-economic status and associated hierarchy of demands. Income consequently helped in securing basic access to food for the poorest households.

Most of the female respondents, even if in debt otherwise, stated that they tend to keep a small balance of their wage, usually a minimum of two or three days' worth, as deposits on their MGNREGA accounts. These funds are reserved for emergencies and to assist in case of sudden income shortfalls, sickness or other immediate expenditure needs, thus serving as an important buffer in the case of shocks.

On the other hand, delayed payment of these wages emerged as one of the central limitations that inhibit the attractiveness of the scheme. In total, 111 (58%) of the respondents complained of delayed payments and stated that if available, they preferred employment options that paid without delay. Leakages through corruption is a factor that impinges on the real wages that workers earn. Respondents mentioned that it is a common practice to be charged INR 20 or more as a bribe against being called for employment.

7. Discussion

A nuanced understanding of the findings with reference to the development dynamics, vulnerability patterns and ambitions of the MGNREGA in Attappady, reveals that the most vulnerable population sections appear to benefit the most. The scheme acts as an instrument for empowerment and enfranchisement for tribal women in particular; it contributes to food security and is an avenue for the sick, elderly and poor to supplement meagre incomes. Savings retained in opened bank accounts provide a short-term buffer in the event of emergencies. Also social networks appear to be strengthened by groups working together. All of these enhance coping capacities. Similarly, younger and able-bodied people appear to avoid MGNREGA employment, given that wage rates in other sectors are significantly higher. Lack of demand and provision of employment as well as late payment of wages are elements that continue to limit the scheme's attractiveness.

Strong legislation and protective action on the part of the administration seem to ensure that land and asset development works are concentrated on tribal land holdings and not diverted otherwise. On the other hand, the extent and sustainability of these interventions is severely limited by existing political economic conditions (class relations) that relate to land rights, unequal power relations and economic viability of traditional agricultural practices and it is doubtful how or if, in the long run, the MGNREGA's mechanisms can effect broader changes to these structures. Existing climatic conditions render some of these ambitions toothless. Similarly, people from the tribal community are not involved in institutional processes of the administration at mid and higher levels. MGNREGA institutions in that sense formally incorporate some of the livelihood issues faced by the intended beneficiaries, but fail to levy more endruing interventions.

Asset construction works are documented as having protective effects against climate extremes, but these relate more to potentialities than to a strategic approach. They have been reported but not pursued vigorously. Quality and impact of the works is another area that appears to be impeded by lack of ownership, supervision, planning and technical capacity. This can work counter to the principles of good adaptation when instituting larger construction projects, which could be flawed. If durability is taken as a function of material inputs, asset works are very short-term in nature. They involve a miniscule material component (5%). Trade-offs between asset construction and wage employment are apparent. Seasonal fluctuations during the dry season were not smoothed out, which has proven to be a major drawback in the face of existing climate exposures and attendant detrimental socio-economic effects. Exposure to environmental hazards thus takes a backseat but remains a relatively easy to tweak intervention option; on the other hand, it can involve making choices between a wage and material focus and attendant benefit distribution.

8. Conclusion

The findings of this case study should not be seen in isolation but as informing a wider climate–development debate and policy deliberations at various levels and scales. Domestically, adaptation is often perceived as a techno-managerial process with comparatively less attention paid to socio-political causes of vulnerability. Both the National Action Plan on Climate Change (GOI, 2008) and the second National Communication (MoEF, 2012) pay disproportionate attention to, for instance, developing new seed varieties, energy initiatives and large-scale, physical build infrastructure. These derive their understanding of vulnerability essentially from a bio-physical framed perspective. Relevant and legitimate as they might be, these interventions can constitute only one part of adaptation and climate policy. The contextual understanding of this study provides an alternative approach, understanding and findings that are rooted in social policy analysis and intervention.

India's nascent State Action Plans on Climate Change (SAPCC) started to look at development–adaptation linkages in existing policy, but it still needs to be operationalised and fine-tuned across many states (Dubash & Jogesh, 2014). Given the structure of the MGNREGA and the way it works

through existing administrative structures, a number of complementarities can be utilised, for instance between the MGNREGA and the SAPCC. As an example, districts identified as highly vulnerable could use specific incentives and resources channelled to them through the MGNREGA, incorporating a contextual climate perspective. Research findings show that the MGNREGA remains relevant for such tasks and carries co-benefits. This gains heightened significance given the volatile political debate that casts doubt on the scheme's survival and the vast number of extremely marginalised community sections that are vulnerable to climate variability and change. The contention that the MGNREGA supports larger developmental change and builds significant adaptive capacities cannot be supported based on the case study experience. Although leakages and inefficiencies exist, the scheme does provide essential support to vulnerable population sections, supports coping mechanisms and offers potentialities that remain to be exploited. It is important to note here that the MGNREGA can only complement more fundamental climate action and should not be utilised from a business-as-usual standpoint, without affecting changes in objectives and mechanisms. This can also involve making difficult choices, such as deciding between a focus on materials or wages.

At the international level, India is a key partner in the UNFCCC negotiation process, and its experiences and actions when mainstreaming domestic policy will be keenly watched. Other developing countries with similarly vulnerable populations and programmatic approaches can learn from and adapt elements that have worked through a mainstreamed policy in India.

9. Endnotes

1. Tribal development blocks are instituted in areas with a high share of tribal population and function to promote integration, coordination and responsiveness of the government departments to further development of the tribal population.
2. Adaptive capacity relates to expanding the coping range of communities which can be contingent on addressing specific climate risks but must also address structural deficits

such as lack of income, representation, health and education. For instance, a better education enables better informed decisions on adaptation (Lemos et al., 2013).

3. This concept contains normative principles for adaptation that acknowledge: multiple stressors, local knowledge, different values and interests, and connections between local and global concerns (Eriksen et al., 2011).
4. Kudumbashrees are female-orientated self-help groups instituted by the Government of Kerala to promote poverty reduction.
5. 'General community' refers in this ccase to people belonging to Christian, Muslim and Hindu groups not having reservation status.

10. Acknowledgements

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PAPER 3

Unpacking worksite participation and social dynamics of the MGNREGA in Kerala, south India

(Submitted to Forum for Development Studies)

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Abstract

The Mahatma Gandhi National Rural Guarantee Act (MGNREGA) is one of India's central social security schemes and covers all rural areas since 2008. It entitles every rural household to at least a 100 days of gainful employment, ambits to create productive assets, provide vulnerable population sections an avenue for enhanced livelihood security and strengthen local democratic institutions. A comprehensive analysis of worksite participation and dynamics has largely escaped research scrutiny. Worksites in the scheme are nodal spaces wherein various participatory ambitions, mechanism and effects flow together. The paper conceptualises these spaces, and through their lens, analyses interconnected aspects of process, internal dynamics and developmental outcomes at a local level. A case study from a tribal development block in south India (Kerala) provides the empirical data for analysis. The paper finds that: processes of worksite selection are not necessarily inclusive of the voices of vulnerable and marginal population sections; community development needs are not appropriately overlaid with officiated development directives; and mates emerge as key 'development brokers'. Social outcomes are prioritised and the most positive aspects can be discerned by way of trust building and networking among participants. On the other hand, asset creation and productivity aspects are neglected attributes of worksites.

Keywords*:* NREGA, rural development, India, participation

1. Introduction

The MGNREGA is one of India's most ambitious and well-resourced social security schemes (NREGA, 2005). It was passed as an Act in 2005 and covers all rural districts from 2008 onwards. The scheme is the latest in a string of public works programmes (alternatively known as wage employment programmes) that have been initiated over the past decades as part of India's rural development and social protection agenda to combat a complex vulnerability pattern composed of extreme poverty, unemployment, environmental degradation and social exclusion. However, it claims to have evolved from earlier programmes in its design, mechanism, scope and objectives (Singh et al., 2013). Over the years, the purview of the MGNREGA has expanded to cover areas of climate change adaptation as part of global and national mainstreaming efforts (Adam, 2014).

Participation has become an emblem of development interventions worldwide and plays a key role in the MGNREGA as well. The World Bank (1995:5) defines it 'as a process through which stakeholders influence and partly control the development initiatives and the decisions and resources which affect them'. Various material and non-material outcomes of the scheme are closely connected to its participatory components and provisions. Sustainable asset creation, social empowerment and economic upliftment by means of the schemes rights-based provisions and working through grassroots level democratic institutions, are levers that envision a change to India's rural development landscape. Worksites under the scheme emerge as nodal spaces where participatory mechanisms, effects and ambitions flow together. In addition, worksites provide useful lenses through which to study internal dynamics and provide insights on factors that influence productive and social outcomes. They are chosen using prevalent institutional mechanisms, see participants congregate, interact in groups, and receive instructions from the state and its agents on work execution. To the best of knowledge of this author, little comprehensive empirical research has been undertaken on these interconnected, salient 'micro-aspects' of the scheme. Despite 'worksite politics and economics' encompassing variables that influence distinct outcomes of the scheme.

The central aim of this paper is to shed light on these developmental aspects of the MGNREGA in the case study area, by way of a critical analysis of worksite participation. A tribal development

block in Kerala state (south India) provides the flesh of data for this undertaking. Angles of analysis pertain to the process of worksite selection, everyday dynamics of this space and outcomes that can be discerned from an instrumental and developmental (capacity-building) viewpoint. A framework with key indicators of inclusive decision-making and planning, social capital formation, organizational capacity and material outcomes is constructed, in order to answer following research questions: 1) How inclusive and responsive is the decision-making process of the demands and needs of intended beneficiaries? 2) What internal dynamics can be discerned at worksites? 3) Which factors influence, and what outcomes can be observed, from an instrumental and developmental point of view?

The paper is structured as follows: an overview of the case study area and methodology is provided, before engaging in a detailed discussion of the MNGREGA's governance mode and developmental aims. Thereafter, worksite spaces are conceptualised and the guiding framework for subsequent analysis is set. Research findings explore these dimensions and finally, a discussion section problematises and interprets these findings.

2. Attappady case study area

Attappady is located in the south Indian state of Kerala and was designated as a tribal development block in 1962. At the time of its establishment, it was felt that a separate classification was necessary to take cognisance of the particular socio-economic structures that exist among the tribal communities. It is spread over an area of 745 square kilometres and has a population of 69,723 people (GOI, 2014). Today's population is composed of a mixture of settlers who migrated to Attappady from neighbouring states and districts, carrying with them differing ethnic and religious identities. In 2011, tribal communities[1] made up 44 per cent of the population, down from an estimated 90 per cent in 1950. The rest of the population belongs to 'general' communities (Hindu, Muslim and Christian settlers – without reservation status) with only four per cent belonging to Scheduled Castes (GOI, 2014).

[1] Also known as *Adivasi*. Composed in the block of Irula (77%), Muduga (13%) and the more remotely settled Kurumba (10%); referred to in the remainder of the paper as 'tribal communities'.

Attappady's climate and ecology is conditioned by its location in the Western Ghats hill range and exhibits varied conditions that differ across its length and breadth (Muraleedheran et al., 1991). Essentially, it is a plateau bordered by the Nilgiris hill ranges in the north and Siruvani hills to the south-west. Agali panchayat is located on the western side and boasts the most fertile land tracts and the highest settler population concentration. Pudur is located on the eastern fringes and Sholayur on the south-east. The latter two have smaller populations with a more arid climate and a higher tribal population share. Economically, the Block depends on the agricultural sector. Traditional tribal patterns of cultivation are rain-fed and include finger millet, paddy, sorghum, maize and other legumes. Over the years, other forms of cash crop agriculture have come to dominate the agricultural landscape, namely, banana, coconut, arecanut and rubber and other spices and plantation crops.

The years between 1962 and 2015 were accompanied by intense changes that affected demographic makeup, ecological integrity and socio-economic parameters (Velluva, 1999; Haseena, 2006; Muraledheeran et al., 1991). The tribal communities were gradually reduced to a minority and migrants from Kerala, Tamil Nadu and Karnataka started settling in the area. This period was characterised by inordinate land-grabbing, deforestation, the introduction of commercial farming practices and an integration into a regional market economy (Velluva, 1999; Kunhaman, 1981). Changes to land use patterns and demands for resources from neighbouring industrial and commercial centres contributed to massive changes in landscape and ecology (Sathis, 1989). Micro-climates were altered, soil productivity suffered and water availability reduced (Sathis, 1989; Radhakrishnan, 2012). In combination, these held a diverse set of detrimental effects – in particular for the tribal communities who suffered losses of their customary land holdings in fertile valley tracts (62% of land holdings being usurped according to D'Rozario, 2013), were unable to sustain and adapt cultivation patterns or integrate into a 'moneyed economy' and whose subsistence economies gradually collapsed (Muraledheeran et al., 1991; Kunhaman, 1981).

Disproportionately high rates of poverty, unemployment, malnutrition and an erosion of social institutions characterise tribal life and economy at present (Manikandan, 2014). Recent data indicates that 75 per cent of tribal households remain in poverty, their illiteracy is much higher than that of other communities (KILA, 2008; Velluva, 1999), and their Human Development Index rank is at the bottom relative to the value of other states and communities within Kerala and India as a

whole (Sujith et al., 2014). Attappady's case has captured the public imagination of Kerala and beyond, and it has been accorded considerable media space.

3. Methodology

Attappady Block was selected as a research field due to its unique development conditions, history and the significant role that was assigned to the MGNREGA in addressing the most pressing development concerns of the area – specifically of its vulnerable tribal communities.

Multiple methods were chosen to provide for a holistic understanding of the research questions. The core of data comprises primary data from 190 semi-structured interviews collected between November 2011 and April 2012. Follow-up visits in December 2012 to February 2013 and February 2014 served to fill data gaps as well as to investigate the effects that the scheme and the state of developed worksites were intended to have over this period. The primary data set is supplemented by interviews with key informants, direct observation and observations as a participant (Matthews & Ross, 2010). Key informant information was collected from various stakeholders who are directly or indirectly involved with the MGNREGA, namely mates, panchayat officials, academics, MGNREGA participants and community leaders. Overall, 25 interviews with key informants were held. Secondary data was obtained from official reports, command papers, newspaper articles and other relevant literature.

Worksites were central to the data gathering process. To get a better overview of the diversity of works and spread the research area, 40 worksites were surveyed in different ward units. A maximum of five respondents were chosen at random from them, whenever possible. As a result of time and resource constraints, the researcher visited households and questioned respondents who had engaged in MGNREGA work over the past year on non-working days as well. To ensure higher representativeness of the data, the sample was stratified according to the panchayat population. Forty-eight per cent of the respondents were chosen from Agali panchayat, 23 per cent from Pudur and 27 per cent from Sholayur. Field notes on the activities and observations from worksites, locality and people were meticulously recorded. Whenever possible, interviews with respondents and semi-structured interviews and key informants were tape-recorded, subsequent to obtaining permission.

4. Locating the MGNREGA's development and participatory role

The MGNREGA operates in all rural areas of India. It is rights-based, demand-driven and at its core, guarantees at least 100 days of unskilled employment to every rural household (NREGA, 2005). Central objectives are the provisioning of productive employment, strengthening of existing rural institutions, provision of an avenue for social inclusion of marginalised population sections, building of assets and regeneration of ecosystem services. The scheme is drafted by the central government, which also funds the entire wage component.

Key studies have focused on facets of its governance (Raabe et al., 2010), socio-economic and ecological impact (UNDP, 2012; Shah et al., 2012; Khera, 2011; Jha et al., 2010; Esteves et al., 2013; Dreze & Khera, 2009; Adam, *forthcoming*) as well conceptual and theoretical examinations (World Bank, 2011; Adam, 2014, Dreze & Sen, 2013). Research has also examined participatory dimensions and documented successes, especially with respect to social and economic empowerment of women. Kerala, its anti-poverty initiatives and decentralised governance structure, has received special attention in this respect and its features (for instance the involvement of local development units) have been highlighted as a contributing factor to the 'success story' of female participation (Sudarshan, 2011; Mahaptra, 2010). Research findings inform a debate that casts light on weaknesses, exploring opportunities and strengthening mechanisms to improve efficacy and efficiency. In addition, research findings influence and fuel political debates that span a spectrum, from reforming to repealing the Act (Ghose, 2014).

Productive asset creation under the scheme relates to enhancing the flow of ecosystem services, propping up livelihood basis of vulnerable population sections (Scheduled Tribes, Scheduled Castes, people below the poverty line), rural infrastructure build-up and convergence with other relevant schemes (MoRD, 2013a). Permissible works include pond construction, drought-proofing, afforestation, irrigation activities and road construction. Wage rates vary from state to state and are set in accordance with minimum rates provided to agricultural labourers, as defined by the Minimum Wage Act, 1948. Notable features in this process are transparency guarantees (publicly available information and open scrutiny of the same), the use of modern information technology and the scope of convergence with other social and agricultural programmes in rural areas. The

active participation of rural stakeholders at various junctures of the schemes implementation is expressed and documented to be a prerequisite in the pursuit of these objectives (MoRD, 2013b; Datta and Singh, 2014; Kidwai and Tyagi, 2008). It induces participation by utilising the existing decentralised administrative structure under the Panchayati Raj institutions[2] and follows a self-targeting, voluntary demand-based system. Its instrumental aspect is rooted in the concrete problematisation of the factors that are perceived to threaten livelihood security of vulnerable people in rural India and concomitant measures deployed to tackle them. For example, persistent social exclusion of low caste and tribal people contributes to prevent them from partaking in development activities and trapping them in conditions of poverty. The scheme, through reservation and targeted development works on the land holdings of marginal sections, seeks to ameliorate some of these conditions.

Civil society actors have actively recommended provisions to ensure a strong legislative framework that protects the rights of labourers, socially excluded groups and promotion of community level organisations to be involved in its everyday functioning (Shah, 2007). These organisations and connected institutional spaces (for example social audits) are open for all local participants to join, discuss and scrutinise the scheme's works and accounts. A central feature that distinguishes it from earlier public works programmes and other development programmes in India is its rights-based approach to employment, which guarantees remunerated employment within a set timeframe to every applicant.

Pretty (1995) provides a typology that is helpful in locating the participatory ambits of a project. On one end lies manipulative and nominal participation, and on the other, self-mobilisation efforts. The MGNREGA's official position can be considered as largely pursuing functional participation, which he describes as follows:

> Participation seen by external agencies as a means to achieve project goals, especially reduced costs. People may participate by forming groups to meet predetermined objectives related to the project. Such involvement may be interactive and involve shared decision-making, but tends to arise only after major decisions have already been made by external agents. At worst, local people may still only be co-opted to serve external goals (Pretty, 1995: 1252).

[2] A decentralised governance system in rural India that gained constitutional status through the 73rd Amendment in 1993 and is composed of village, block and district units (gram panchayat, block panchayat and district panchayat).

More interactive components exist on the sides as well, for example through joint analysis and formulation of Action plans at the local institutional level.

The table below illustrates the percolation of decision-making processes from central to local level.

Table 1. Process of decision-making under the scheme

Decision-making process	Administration and worksite management	At the worksite
Central and state level - Guidelines and state specific design features **District level –** approval**,** verification, integration of block sub plans into mid-term perspective plans	Permissible works and administrative structure for worksite management	-Mates supervise and instruct works -Minimum 7 people to join
Block level (block programme officer [BPO]) – Verification, consolidation of panchayat work plans into district perspective plans. Planning of works of higher cost value to be undertaken by Block. **Gram panchayat** – nodal agency, planning, consolidation and approval of local action/ward plans into panchayat plans (at least 50% of total cost allocation to be executed by panchayat).	<u>Planning and supervision</u> -BPO recommends, supervises and approves work plans -Locations for intervention are recommended and applications for the same received -Junior engineers/technical assistants conduct assessments before sanctioning of works.	-Participants are informed on its timing and location and congregate at the site -Should be located within a proximate distance (less than 5 km)
Grama sabha (village assemblies) Formulation of action plans, proposal of works, beneficiary selection and work planning, presentation and final authority for works and plans. Can be complemented by the involvement of grassroots level organisations such as women's self-help groups.	- Selection and prioritisation of works and beneficiary site application and approval, residents congregate for discussion of panchayat and ward action plans.	-Provision of facilities such as shade, tea, water, emergency medical kit, children's crib, muster roll, information board on works undertaken

Source: MoRD, 2013b

The general guidelines are framed by the central Act and the Ministry of Rural Development (MoRD) issues updates regularly. A certain degree of leeway is accorded to incorporate state specific design features. From then onwards, the process of planning and work execution percolates through the Panchayati Raj institutions. The nature, location and timing of asset works are the result of a culmination of steps. These involve the district, block, gram panchayat and grama sabha, in similar linear hierarchy, all over India.

In Kerala, the state's decentralisation initiative following the People's Planning Campaign[3] (1996) plays a crucial in implementing the MGNREGA. Under it, considerable powers are devolved to local governance institutions with a framework to encourage and allow for the active participation of rural citizens in decision-making. Concretely, every adult citizen can participate in the formulation of local action plans, whose starting points are drawn up at open and advertised grama sabha meetings. These tentative plans flow in a process of budgeting and sectoral planning that involves a task force of technical experts, administrators, politicians and community development organisations. The process percolates upwards through the grama sabha and ward units (ward units are composed of grama sabhas), before being finalised at the gram panchayat level. Kudumbashree units[4] are the focal points to route anti-poverty initiatives in Kerala and are heavily involved in MGNREGA activities. They are female-centric, self-help groups composed of poor women and organised into neighbourhood groups (NHGs), area development society (ADS) and community development society (CDS) units. Each of these units federates into the next level (from NHG to CDS), that is, from sub-ward to ward and panchayat level. Mates in Attappady are chosen by Kudumbashree units, and in tribal hamlets it is *ooru vikasana samidhis*/hamlet development committees (OVS)[5] that select them. Both have discretion in recommending works in their respective localities.

[3] The People's Planning Campaign was launched following the 73rd Constitutional Amendment (1993) by the CPI(M) party in Kerala in 1996 and has been described as a model for decentralisation and devolution of power for the rest of India (Heller et al., 2002).

[4] Female-centric self-help groups that are nodal agents to route development/anti-poverty programmes in Kerala since 1998.

[5] OVS units were formed under an earlier programme (AHADS), and are hamlet development committees that were meant to look after social and land development in tribal hamlets. Theoretically, they draw on 'traditional' societal structures, and half their members should be women. After winding up of AHADS in 2010, the OVS units lost some of their functionality.

At the outset of MGNREGA's development planning, a labour budget is estimated based on the anticipated demand and interest evinced by residents of a panchayat. Officials, in close collaboration with grama sabhas and ward unit associations (such as NHGs) carry out this exercise. Grama sabhas formulate action plans (which include individual applications from private landowners) that are pooled and used in the estimation of labour demand and a shelf of works that satisfies the anticipated demand. Gram panchayats consolidate the plans before forwarding them to the block level for approval, who in turn forward them to the district coordinator for assent and sanction of funds.

Prior to the inception of individual works, they have to be presented before grama sabhas, which are the final authority for approval, priorities must be ranked and priority beneficiaries selected. The implementing agency for at least 50 per cent of the total cost value of works has to be the gram panchayat. Worksites, in accordance with the finalised plans, are started after technical sanction by a task force of engineers/technical assistants and financial sanction by the gram panchayat/block. Subsequently, the officials issue muster rolls, and rural residents who demand employment are allocated to a worksite. Mates are in charge of their immediate functioning and act as administrators and mediators between the official agencies and participants.

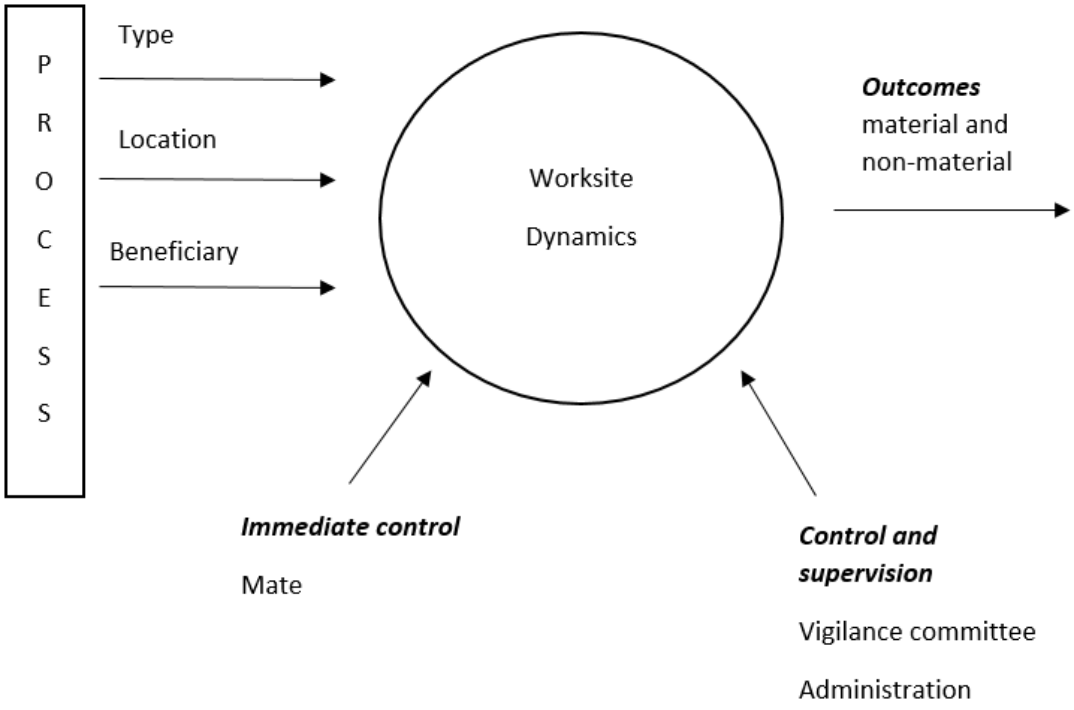
5. Conceptualising worksites

As outlined, one of the key purposes of the scheme is to construct assets that directly and indirectly promote development activities of local communities, are responsive to their demands and provide employment. Worksites are conceptualised in this paper as spaces in which tangible asset creation takes place, participants meet and decisions taken at various levels flow together. In this sense, they are spaces of physical as well as social production. Lefebvre (1991:24) defines a space 'as a social product … it is not simply "there", a neutral container waiting to be filled, but is a dynamic, humanly constructed means of control'. Worksites and their immediate extensions are consequently dynamic domains that experience different forms of contestation between actors. Gaventa's 'power cube' (2006) provides a useful analytical tool for their study. Local spaces can be closed, invited and claimed created. Relevant here are invited spaces that the state and local extensions (decentralised governance institutions and worksites) have opened up to participants

and other actors involved in pursuance of an officially propagated accountable, inclusive and rights-based governance regime. The forces acting on them can be visible (formal rules and institutional mechanisms), hidden (contestation between powerful and less powerful groups and people and setting of agendas) or invisible.

Worksite location and type are informed by decisions taken by the local administration, in co-ordination with the respective communities and other stakeholders. Activities can take place on private as well as public land and the inputs and outcomes can be material (improvement in resource availability or productivity) and non-material (empowerment, group trust, self-esteem). Both are closely related and dynamically interact with each other. For example, arbitrarily chosen works that are not reflective of the demands from local people are unlikely to induce them to take ownership, which in turn affects their motivation to work and affects associated physical outcomes – a common experience documented from earlier development programmes in India (Saxena, 1998).

Figure 1. Illustrating the conceptualisation of worksites



Source: Author's illustration

In order to study the worksite space, a framework is constructed around a set of key indicators drawn from the fieldwork, to serve as a point of reference. For the scope of this study, some aspects are consciously excluded, such as extensive use of aggregated panel data analysis.

Table 2. Framework for analysis of worksites processes, dynamics and outcomes

Indicators	Measures	Empirical observations
Inclusive planning and implementation	-Attendance of concerned public meetings -Representation of vulnerable groups in public meetings - -Cognisance of community needs	-Grama sabha attendance, representation and engagement -Understanding of development challenges -Awareness of key provisions -Resource allocation to lower agencies
Social capital	-Increase in community interaction and trust -Self-esteem	-Social interaction at worksite -Relationship with mate -Use of local organisations -Public perception of the scheme
Organisational capacity	-Staff strength and ability of organisation to manage implementation	-Number of staff -Involvement and expertise
Material outcomes	-Productivity at worksite -Motivation of participants -Ability to perform specific tasks -Ownership of assets	-Difficulty of work -Distance to worksites -Identification with works

Source: Adapted from Morrissey (2000)

6. MGNREGA and Attappady Block

The scheme came under the first phase of the MGNREGA and was introduced in Attappady in 2006. During the fieldwork period, it constituted the pivotal development intervention in the Block. It runs to date, that is, 2015. Development priorities, public works and resource allocation have notably, from 2011 onwards, focused on the development of land holdings that belong to the most vulnerable population section – the tribal communities. Priority here implies that a total of 25,750 acres of largely fallow tribal lands were earmarked for agricultural development. Based on the

demand for labour, an initial 3,322 acres were earmarked in 2010–2011 to fall under its purview (Prabhakaran, 2013). Other private land holdings belonging to (poor) small and marginal farmers are given secondary importance and can be developed if there is excess labour demand, or once tribal land development is not feasible or is exhausted in a particular area. Prior to 2010–2011, relatively more works were executed on physical built infrastructure (especially check dams, trenches, ditches) and general purpose facilities. The MGNREGA co-existed with a previous programme (AHADS)[6] for a brief period and took up some of its eco-restoration works (*The Hindu*, 2011). A majority of households in the Block are registered with the scheme and participating households are split in approximately equal proportion between tribal and non-tribal population segments (NREGA, 2012).

7. Unpacking worksite participation and dynamics

Planning and implementation

a) Works instituted by the Block are larger in size and implemented when cost estimates exceed INR (Indian Rupee) 300,000. If the costs lie below that, usually in the range of INR 200,000, works are executed by the gram panchayat. In Attappady, according to official estimates, 70 per cent of the cost value lies at the panchayat level and 30 per cent at the block level. This illustrates that recommendations on cost allocation of works are upheld and exceed the expected 50 per cent ratio. It indicates a greater share of devolution to lower levels of the administration, which involve smaller projects.

b) Grama sabhas are held at the ward level twice every year and remain the principal institutions for discussing work-related matters. Eligible applicants coming from marginalised and vulnerable population sections can submit proposals for recognised development works and discuss existing ones. All attendees are also entitled to propose general purpose works or forward complaints.

[6] AHADS stands for Attappady Hills Area Development Society; this ran from 1995 to 2010 with a specific focus and eco-restoration and development of tribal hamlets.

A majority of the 190 respondents (77%)[7] stated that they had participated in grama sabha meetings formally at least once over the past year. The MGNREGA is the item of discussion to which most time is usually devoted. However, respondents mentioned that they usually felt excluded from the *active* decision-making process. Their attendance is in general perceived as a formality that essentially involves 'providing a signature for attendance' and is required to 'listen in but not actually be involved'. Most of the MGNREGA workers in Attappady are female and make up about 91 per cent of the total person-days generated (NREGA, 2012). On the other hand, it is men who are dominant in institutional representation. As one woman from the general community stated: 'I come to the grama sabha because I am expected to be present but I rarely engage actively in the discussion; usually it is my husband or other members who speak up'[8]. Constructive exchanges in which female respondents have a sense of ownership, rarely take place. This can be further stratified along gender, class, caste and ethnic lines. Tribal respondents in particular expressed a sense of lack of ownership. During a grama sabha meeting which this researcher attended in February 2013 in a demographically mixed ward (presence of general population and tribal population), the power relations and functions became more apparent. The ward is located in Pudur panchayat and represents approximately 650 families. About 87 people attended, or at least provided signatures. Most of the time was devoted to MGNREGA discussions. Of the attendees, six people provided a signature with their thumb impression (an indicator of illiteracy). Only three people from the tribal community were present. This serves to illustrate that tribal and lesser educated (illiterate) people are under-represented, even though MGNREGA works are primarily intended to benefit them. The active participants were observed to be official bearers and facilitators, that is, elected ward representatives, village extension officers and a few men from the general community. While the ward representative was a woman and led the meeting, men were most vociferous throughout the discussion. In this sense, while the bureaucracy intends to propagate the upliftment of the most vulnerable population section and foster participation, their representation in decision-making is skewed and subject to a 'representational gap'.

[7] Of the respondents from the semi-structured interviews, 85% were women.
[8] Interview: 21.3.2012, Bhomyappady, Pudur

Nevertheless, beneficiary selection as such appears to be a less contentious issue compared to other programmes. According to the Village Extension Officer in Pudur, the sums involved in MGNREGA works are relatively small. In combination with the absence of contractors as intermediaries and the overwhelming labour component in works, the scope for corruption and contestation for the receipt of funds is reduced, and eligible applicants will, in most cases, receive work sanction.

Worksite selection is pen ultimately contingent on grama sabha meetings and decisions. But decision-making and discussions do not necessarily include the voices of vulnerable people and little evidence of their involvement can be discerned at this level – given the prevailing power equations between gender, communities and official agencies.

c) Awareness of provisions that allow individual land holders to influence the sanction of worksites was fairly high, with 46 per cent of the respondents elaborating that they were aware of the role and process that the grama sabha and associated community development organisations such as OVS and Kudumbashree play when deciding on beneficiary and work site location. Despite this, some respondents asserted that they were reluctant or lacked confidence to speak up and submit applications for land development. As one elderly tribal female respondent noted, 'I know that I can submit an application for my plot of land at the grama sabha but I have not done it so far and wouldn't know if it is going to be accepted'[9]. Also, there persisted a lack of clarity where decisions were actually taken regarding the worksite respondents currently worked on. Forty-nine per cent of the respondents expressed their inability and lack of power to actively influence the nature and location of worksites. Selection of plots for land development in tribal areas appears to be less a demand-driven exercise than one directed by the local administration.

d) In terms of key entitlements, a near-universal awareness existed among respondents about the number of employment days (100) and the amount of daily minimum wage guaranteed to them (see Table 3). On the other hand, only 21 per cent knew that the job card was supposed to be held by them rather than by the mate or other administrators. Similarly, most

[9] Interview: 17.3.2012 Kuravoore oore, Agali

were unaware of the provision that guarantees them an unemployment allowance if they do not receive employment within 15 days of applying for the same.

Table 3. Awareness of key entitlements

Employment-related entitlement	Level of awareness
Unemployment allowance	8 %
Job card to be held	21 %
100 days of employment	96 %
Minimum wage	96 %

Source: Author's illustration

e) A spelled-out goal of MGNREGA works in the Block is to address livelihood issues by fostering agricultural development and to promote the return of tribal communities to agriculture. Lack of labour and poor land quality have been identified as two important impediments to this goal. The MGNREGA's development works and its success in this respect have been accompanied by a fair amount of publicity in Kerala, with claims that 'green shoots of agricultural recovery were springing up' being made by the administration (*The Hindu*, 2011; Prabhakaran, 2013). The set priorities are also reflected in the category-wise distribution of works, as illustrated in Table 4.

Table 4. Type of works 2011–2012

Type	Flood Con-trol	Rural Connec-tivity	Water conserva-tion and harvesting	Renovation of traditional water bodies	Drought-proofing	Irriga-tion canals	Irrigation facilities to sc/st/iay/lr	Land develop-ment	Total
Dis-tribu-tion	184 (16%)	13 (1%)	53 (5%)	9 (1%)	11 (1%)	4 (.4%)	1	874 (76%)	1146

Source: Nrega, (2012)

The respondents who held agricultural land mentioned that labour availability is a problem that can inhibit agricultural operations, albeit a relatively minor one. During the period 2012 to 2015, 98 per cent of the expenditure was carried out on works under the guise of 'agriculture and allied activities', with works overwhelmingly falling in the land development category (NREGA, 2015) and 95 per cent of the total expenditure on the wage labour component. Forty-four per cent of the respondents pointed out that it is lack of water that concerns them the most. Besides water resource availability, (which is related to climate vagaries in the Block), it was wildlife intrusions, plant diseases, high investment costs and market vagaries that affected sustained agricultural operations.

Water development constituted, for example, only a small fraction of works. In this sense, community development needs and official priorities are misaligned to a certain degree. One elderly male tribal respondent in Agali panchayat, when asked what land development had brought him, responded: 'Yes, my land was developed recently and I am happy with the work – but I will not be able to practise agriculture and haven't done so for many years'[10]. Another young tribal respondent highlighted the positive aspect of being given resources to develop his plot after years of neglect, but also chipped in: 'It depends on the rains if we will be able to have any harvest this year'. The risk of engaging or attempting agricultural operations is reduced through MNGRGEA works, but it remains doubtful how the initial impetus will sustain itself. Tribal researcher, Madhava Menon, expressed similar hopes and reservations: 'Tribal land development is a good thing; they earn an income from working on their own land which was rarely the case earlier. But if it will translate into something more sustainable is questionable'[11]. Promised incentives by the agriculture department to provide other extension services have not translated into livelihood gains according to the respondents and other reports (Prabhakaran, 2013). Officially, stated goals and developmental realities are consequently only overlaid at a superficial level. As the head of the NRLM mission in Attappady stated: 'MGNREGA are just light earthworks with little agricultural integration and value'.[12]

[10] Interview 9.12.2011: Ragetupaddy, Agali.
[11] Interview:7.2.2013: Agali AHADS guest house, Agali.
[12] Interview: 2.2.2014: Agali village, Agali.

Worksites and operational decisions

Engineers and junior engineers (overseers) are involved in making cost estimates and, depending on the nature of work, in creating work plans and setting targets for completion. Once the work is approved by the respective authorities, at least seven workers need to be assembled and willing to join to start a site. The mate acts as the nodal point, taking operational decisions and communicating the location and timing of work to respondents. The key means of communication for this is the mobile phone (84 per cent of the respondents possessed mobile phones). In Attappady, mates are exclusively female and selected through Kudumbashree self-help group units[13]. In tribal hamlets, mates are also female but can be connected to OVS units, which fall under the Integrated Tribal Development Programme and are referred to as 'ST promoters'. The recommended requirements for a mate to be selected are literacy, and ideally, possession of an educational qualification, for example a high school diploma. Their selection process and control over the worksite is consequently of great importance. In camps, mates receive a single day's training where they are informed of administrative duties, guidelines and introduced to basic technical training. Duties involve the dissemination of information to labourers on their rights, re-addressing doubts, collecting muster rolls (registration papers) and ensuring worksite facilities are present (MoRD, 2013b).

A respondent who had worked as a mate for several years, commented that mate positions tend to be 'priced possessions' that allow them to establish positions of power and authority – and often open up avenues for corruption. 'Mates are often involved in corruption with friends who are engaged at worksites and do little work'[14]. She stated that these positions are rotated within Kudumbashree/OVS units[15], who recommend and forward the application of mates for approval to the authorities. Each of these local units usually comprises between 10 to 12 elected members at the neighbourhood level, which feed into ADS groups. She mentioned that the majority of women selected as mates are 'better off', 'politically active or connected through their spouses'. Of the 40 sites visited, a third reported bad relationships with the mate. The most common instance of corruption is to over-report muster rolls. The mate registers more workers than actually are on site

[13] About 100 Kudumbashree chapters, composed only of tribal members exist in Attappady. Most of the ST promoters were also active members in the Kudumbashree.
[14] Interview: 4.4.2012, Sambarkoode oore, Sholayur.
[15] One ADS (Area Development Supervisor) is usually in charge of 2-3 worksites.

and then splits the accrued wages with the absentee worker. Another reported practice is to coerce illiterate or powerless participants by threatening not to call them for work if they do not pay a lump sum of their wages at the time of disbursement. When the researcher perused muster rolls and cross-counted workers, it was common to find discrepancies of one or two people being 'sick' or 'coming for work later on'. Complaints on site ranged from mistreatment of workers, absence of the mate during working hours to selective, insufficient dissemination of information and also delayed availability of muster rolls. Another salient aspect is the role that mates can play in site selection (as they are connected to local development units, which are powerful agents when recommending works). Respondents mentioned that they preferentially recommend land development works to friends and relatives and 'have their own interests in mind'. In addition, mates from both organisations have strong party affiliations[16] and may go as far as to consciously exclude or discriminate participants who belong to a different party. Instances of discrimination were particularly evident (but not exclusive) to worksites where the mate was from a non-tribal community but had tribal workers working under her. One mate, from the general (Christian) community in Sholayur panchayat, emphatically outlined her disdain for tribal people and their way of life: 'Tribal people are lazy and *ganja* (drug) addicts. We can't expect them to contribute to developing this area through hard work'.[17]

Distances covered to get to a worksite were, except in two cases always below the recommended five kilometres. This means that worksites were situated in close proximity to respondents' residential areas and enabled easy access, which acted as a significant incentive to participate.

Implementation and material outcomes

The physical output of a worksite is contingent on the ability and motivation of workers, clearly defined guidelines and an efficient administration (Datta & Singh, 2014; MoRD, 2013b). Subsequent to site selection, engineers in consultation with mates, landowners (if applicable) and workers, set targets for completion. In theory, this has to be adjusted based on the ability and

[16] Kudumbashree units were started under the left-led CPI(M) government; they are influenced by and are seen to be leaning towards this party.
[17] Interview: 16.3.2012, Pettikad,Sholayur.

composition of the workers at the site. For example, women are expected to perform less labour per day than men. In case work outputs are not met – that is, if a site is not completed on time – wage rates can be adjusted or reduced accordingly. The processes from initial estimation, and supervision until final evaluation are complex and time-consuming. During the period 2011–2012, 1,146 project sites where planned or under operation. Technical personnel comprised six engineers and six overseers. Per person, this translates into 96 work projects over a financial year. The combined MGNREGA staff strength at block and panchayat level is 23 persons. On a follow-up visit to the Block, the newly transferred block programme officer was interviewed and questioned on the staff situation[18]. During the conversation, he expressed displeasure at his own posting in the block 'due to political reasons' and 'not wanting to be here'. He was not aware of MGNREGA provisions and its detailed functioning in the Block. Similar views were expressed by other senior staff members who were transferred to Attappady; postings were seen as a punishment because of the Block's remote location and poverty-like conditions.

How difficult and demanding did workers perceive the work to be? Did performance/work output result in commensurate changes in wage rates? Thirty of the respondents (16%) described the work as difficult or very difficult, this largely on account of heavy earthworks (hardened mass) during the dry season. A majority of respondents (117 or 62%), felt the work to be of relative ease and 'little difficulty'. Largely those who suffered from ill health and age-related ailments expressed concerns. Only four per cent experienced a wage differential that arose from work performed below targets. Reasons for this could be manifold, but one of them is that work targets are set quite low. In five sites surveyed, respondents stated that they start work at about 10:30 am and leave by around 4 o'clock, with an hour's lunch break. Effectively, this translates to five-and-a-half hours of work. The Pudur panchayat secretary[19] and Agali panchayat section secretary [20]substantiated that, in terms of productivity and work output, the demands on workers were very modest and a majority of worksites essentially generated employment for 'weaker sections who can't perform hard labour'. Workers themselves stated that in most cases quality was not up to the mark and little enduring. One respondent stated that 'the quality is worse than in earlier projects like AHADS,

[18] Interview: 5.2.2014, Agali village, Agali.
[19] Interview: 7.2.2014, Anaikatty, Pudur.
[20] Interview: 6.2.2013, Agali village, Agali.

also because of the lack of material components and proper planning'[21]. Of the 40 worksites visited, the researcher could document that purposeful works were undertaken at only 11 sites, in the sense of visible integration with existing agrarian operations. This took mainly place in cooperative farms and areas of Agali, where land was more fertile and landowners (of the general community) had a clear stake in using MGNREGA resources for agrarian activities. All of the sites were already under some form of cultivation. When it comes to a 'return to agriculture' on tribal lands – where majority of sites are located – respondents expressed little confidence in sustained, profitable agricultural activities; at the same time, they called for more resources and development activities. Another repeated assertion from the tribal community was that 'this is just another government scheme; we have seen them coming and going'. A group of female participants added, 'If heavy works are involved, like digging wells or carrying heavy stones, we call upon men in the locality to help out'[22].

No clear and cohesive methodology was followed when works were instituted. Work targets differed for the same type of work at various sites. During the first period of this fieldwork, a highly visible work item took place along roadsides. This involved weeding in combination with digging of small ducts alongside them for 'flood protection'. In some instances, the expected work output was 12 metres per day per person; in some, 10 metres was expected and in others 8 metres even though the composition of workers was similiar. This points to a lack of clearly enforced methodology and targets, and also to corruption. Vigilance committees (elected through the grama sabha) composed of volunteers and civic organisations perform check-ups, but to the knowledge of this researcher, no penalisations of mates or other central stakeholders were meted out during the fieldwork period for lack of work performed. Essentially, it was muster rolls and the presence of basic amenities that were cross-checked. The researcher could document that at most worksites muster rolls were kept and core facilities were present (water, emergency kits). In this sense, formal rules were followed. Only 47 % of participants have heard about or participated in monitoring through social audits.

[21] Interview: 25.2.2012, Adiyankanthi, Pudur.
[22] group interview: 5.1.2012, Mukkali, Agali.

Social relations at worksites

Attappady has a conglomeration of different ethnic, religious and caste groups. At MGNREGA worksites, they congregate to perform labour. Forty-one per cent of the respondents agreed with the assertion that connectedness, trust and community relations improved perceptibly after the scheme's introduction. This was highlighted particularly at 'mixed' worksites. A slight majority of participants expressed the view that social relations remained the same. This viewpoint is common in localities where little or no mixing of community groups takes place. Half of the worksites surveyed were mixed, and respondents emphatically confirmed that working on equal terms had positively contributed to building a degree of trust and connectedness. Prior to the scheme, communities remained largely separated and only sporadically worked together. Tribal communities are used to work as casual labourers on farms, but rarely engaged in work with other community members on equal terms. Different groups from a broad spectrum of varied religious, caste or ethnic affinities shared this perception. One woman from the general community elaborated that 'now generals and ST people work together and share a workspace. Earlier, people worked separately and rarely interacted. Now we get to know each other much better.'[23] This does not mean that no discrimination existed, but it was outweighed by positive experiences. Another repeatedly expressed assertion was that workers stood in for co-workers who were not able to accomplish their daily work output targets. Elderly and sick people who were unable to do substantial work, were carried by the group, and thus did not have to suffer wage losses. This seems to be another reason why wage differentials were not commonly recorded. It was not clear and remains to be seen if this created 'group trust' remains only within the worksite network or stretches beyond and spills across other societal sections.

[23] Intrerview: 5.3.2012, Pathimala, Agali.

Self-esteem and public image

The researcher found that sections of the public held a belittling view of the scheme's work and a stigma existed around who was doing the work and what work people took up. One group of tribal respondents in Agali panchayat emphatically decried the perception they received from other communities. They stated: 'We are looked down upon as people working on a tribal scheme and performing only menial work'[24]. A common perception in the main village (Agali), where the researcher stayed, was that it was 'the scheme that gives work for women, tribals and people who can't or don't want to do hard labour anymore'. This referred particularly to tribal people, but extended to other communities and its gendered (paternalistic) relations as well. Kudumbashree units and the female-centric approach to development are strong drivers that contribute to the overwhelming involvement of women in the scheme – with attendant positive effects (Adam, *forthcoming*). At the same time, the stigma appears to act as a social barrier – besides the wage component – for men to evince interest to participate, reflecting these paternalistic attitudes. A farmer from the general community in Sholayur elaborated: 'The scheme is good for women. My wife works there too and earns an additional income, but not much of real work takes place without men being involved for heavier construction works.'[25] He added that if more works were allowed on (general landowner) lands, the scheme would be put to better use than in the higher ranges on tribal land, where little agriculture can be practised. The type and location prioritised by the administration had obvious ramifications on its perceptions by other community members. Men, especially from the general community, shrugged off the idea of working under the scheme. As one male commented: 'Even if I am unemployed, I will wait for better-paid or other work – but I will not join the scheme'[26]. On the other hand, given that these spaces are women centric in a society that exhibits paternalistic tendencies they also stated that it gives them an opportunity to work outside their homes, not constrained by these pressures thus having an emancipatory effect and in many cases a positive effect on self-esteem.

[24] Interview: 2.2.2012, Jelippara, Agali.
[25] Interview: 15.3.2012, Otukule, Sholayur.
[26] Interview: 19.11.2011, Kalamaram, Agali.

8. Discussion

Decision-making procedures, anchored in Kerala's decentralisation process, provide an avenue for the participation of rural citizens in MGNREGA-related matters in Attappady. Formally, the devolution of powers to the grama panchayat and related provisions of the scheme appear fulfilled, with a majority of works instituted through it and a moderately high awareness rate among participants.

Grama sabha meetings were attended by the majority of respondents, but attendance does not appear to translate into substantive involvement of marginal and vulnerable population sections into expressed, political agency at this level. Although it is overwhelmingly women who are involved at worksites – which is a welcome step – it is men, general community members and officials who dominate deliberations rather than the participants of the scheme themselves. Also, worksite processes (their type and location) are well regulated and fall within a predetermined framework, as reflected in the dominant focus on land development works on tribal land. This step might be well intended, but it can be problematic. Political ownership of tribal issues, as reflected in administrative priorities, can also contribute to the bypassing of more substantive community needs that are anchored in other political economic realms. As Cornwall (2004) and others caution and note (Kothari, 2001), this form of well-intentioned participation potentially de-legitimises and thwarts other forms of political engagement that question more fundamental forces of change, such as labour and land relations. Political exigencies in the highly politicised state of Kerala make tribal development an attractive publicity plank, but the direction of MGNREGA's outcomes in Attappady appear more superficial than meaningful in their present form. Land development, with respect to agrarian livelihoods, are helpful in reducing investment risk and provide an initial fillip to cultivation, but are intrinsically limited. The overwhelming labour component provides employment and income that help reduce proximate vulnerability patters (Adam, *forthcoming*) but other valued outcomes, such as giving a substantive voice to vulnerable and marginal people, fall short.

At the worksite, mates emerge as powerful 'development brokers' who wield considerable influence. Even though their role is primarily delineated as administrators and mediators, it extends

beyond that. Selective work prioritisation and discrimination are commonplace. On one hand, their selection through Kudumbashree or OVS units and subsequent gendered composition, encourage women to step forward to participate in development activities and this has been documented as being a successful lever for sustainable asset construction and empowerment (Mahaptra, 2010; Shoba, Thankom and Devi, 2011). On the other hand, it appears that political affiliation and undercurrents connected to these units influence mates and their interpretation of the work role. In this sense, the involvement and control of Kudumbashree units is not a magic wand that should be devoid of critical scrutiny[27]. Awareness of provisions (which is also a task of mates and local institutions to communicate), is generally quite low and instances of corruption are frequent. Especially with regards to the unemployment provision, a key transformative ambition of the scheme, there is little awareness which points to a lack of information flow but also a lack of ability to claim these entitlements rooted in illiteracy and powerlessness. The nature of corruption, given the otherwise protective ambits of the scheme, is taking place at the 'grassroots' level. In what could be called a 'democratisation of corruption', smaller amounts of money are being exchanged by mates through coercion of participants, or in collaboration with them.

One of the most perceptible and unintended positive outcomes of the scheme, is an improvement in social capital by way of worksite participation. Social capital refers to levels of trust and reciprocity, norms and connectedness between people (Blomkvist & Swain, 2001). It is an important aspect of community development initiatives and can foster collective action as well adaptation efforts (Adger 2010; Narayan & Woolcock, 2000). Apprehension and distrust between different ethnic and religious groups runs deep in Attappady. At worksites, different community groups perform labour under similar conditions and earn the same wage. Respondents, for instance, step in for weaker members and transcend otherwise normalised social boundaries to interact with each other to form bonds. Also it has a positive effect on the self-esteem of female participants.

In terms of material aspects, demands on participants and output are influenced by the composition of participants and appear to be set quite low. Work is usually not judged to be very difficult and wage differentials are rarely recorded. While it is argued by some commentators that work output does not matter much and income transfers are the core purpose of the scheme, its official directive

[27] For more information on the politics and dynamics of the Kudumbashree in Kerala *see* Williams et al.2011.

and organisational composition state otherwise. What tends to make a difference is if clear ownership patterns exist and identification with the work is involved. In Attappady, it is general community members who practise commercial agriculture and more frequently supervise and take ownership of works. Also, cooperative farms make good use of resources provided. However, on most tribal lands, no clear stakes exist (for political, economic and ecological reasons) and ownership of the works is rarely taken. Similarly, on public lands, no clear patterns of work enforcement and uniformity exist. In terms of organisational capacity, many officials take a rather dismissive view of the scheme, while the staff strength appears to be stretched. Local institutional spaces exist and vigilance committees perform check-ups on worksites, but have limited influence or interest in evaluating worksites beyond the most visible items (muster rolls and presence of basic work facilities). The composition of participants is heavily skewed towards women, and while the wage component under the MGNREGA is lower compared to other sectors in Kerala/Attappady (which contributes to that low ratio), there also exists a social stigma attached to the scheme that deters male participation.

9. Conclusion

The paper discussed worksite participation and related social dynamics in Attappady. It shows that rather than being an instrument of popular agency, the scheme's worksite characteristics remain heavily influenced by the local administration's trusteeship role. Decision-making processes through the decentralised institutions remain embedded in local power relations, which are not necessarily reflective of voices from vulnerable population sections that participate in the scheme. Moderate participation and awareness rates point to a process of political learning, but it is unclear how and if this can result in exercised agency.

On site, mates emerge as key 'development brokers', whose organisational role calls for critical scrutiny. Social outcomes are the most discernible and prioritised aspects at worksites, especially through group interaction and a building of trust and networks. Productivity aspects on the other hand are neglected attributes, with interrelated aspects of lack of ownership, identification and integration with developmental processes affecting them. Low work demands and a not fully committed administration contribute to this, with reminders of shortcomings earlier rural

development programme coming to the fore (Saxena, 1998). A social stigma attached to the scheme was found to be an additional factor that influences worksite participation. Entitlements cannot be fully availed of in the presence of lack of information on key provisions, such as the unemployment allowance - with illiteracy and unequal power relations adding to this shortcoming.

The paper thus highlights some of the limitations of the scheme as a tool for participatory and rights based, 'transformative' development – highlighted otherwise as one of its ambitions. It also draws attention to local, contextual factors in shaping the scheme's outcomes and provide for unintended effects. Ultimately, while positive experiences exist, structural factors in Attappady continue to affect, impede and guide worksites and developmental outcomes from the scheme.

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PAPER 4

Adaptation trajectories and challenges in Attappady, south India

(manuscript)

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Abstract. *Climate change adaptation has become an important aspect of research and policy agendas at different scales – globally, nationally and locally. One stream of thought relates to the thematic area of barriers or challenges that adaptation faces. This paper falls within that area and explores local adaptation trajectories and challenges in a tribal development block in south India. Through the lens of key livelihood strategies pursued in the block – namely development interventions, migration and on-farm strategies – it explores the challenges and factors that contribute or have contributed, to impeding sustainable adaptation outcomes in Attappady. The paper argues that development interventions have not succeeded in addressing structural causes of vulnerability; they have, however, provided an important coping mechanism. Migration is a socially and culturally differentiated phenomenon and is not a viable diversification option for the most vulnerable population segment. Finally, it is found that recent on-farm adaptation strategies present a case of maladaptation that promote marginalisation and is ill-adapted to the local ecological and cultural landscape.*

Keywords*:* Adaptation, vulnerability, rural development, India

1. Introduction

Adaptation to environmental change is a time-tested phenomenon characteristic of collective and individual action in human societies. Adaptations can take various forms, such as developing seed varieties, constructing water storage facilities, forming risk management institutions, and behavioural change. The purposes of adaptation processes and actions are to reduce risk and uncertainties stemming from events precipitated by environmental change and related hazard events, including those emanating from climatic variability and change. Ultimately, they aim to secure the prosperity, wellbeing and survival of communities in a given spatial context. Successes and failures of adaptation have been documented historically, as with the demise of the Norse population in Greenland for instance, or the collapse of civilisations due to prolonged drought periods (Diamond, 2005; DeMenocal, 2001).

In the context of anthropogenically induced climatic changes and public and policy debates surrounding the discourse, adaptation studies have gained widespread visibility and added vigour. Governance debates and research agendas revolve around understanding, providing and creating effective levers and mechanisms to foster adaptive capacities and action at different tempo-spatial scales. These deliberations range from the global to the local, involving multiple actors and science perspectives.

One line of inquiry concerns the reaching of tipping points or thresholds beyond which adaptations become impossible or are no longer feasible (Lenton et al., 2008). Shifts and alterations in biophysical systems can lead, in extreme cases, to species extinction and render adaptations futile. The Intergovernmental Panel on Climate Change (IPCC) of 2007 sees such limits as being firmly rooted in ecological and physical attributes of a system. Barriers to adaptation can, on the other hand, be surmountable, even in the face of stress on system attributes. Adger et al. (2007:733) define these barriers as 'the conditions or factors that render adaptation difficult as a response to climate change'. Technological and economic developments can enhance, stretch or overcome certain barriers but also have recognisable limitations (Agrawala and Fankhauser, 2009; Parmesan and Yohe, 2003). Beyond clearly defined ecological and physical limits and their technological and economic components, socially rooted limits and barriers pose quite different questions and are more 'fuzzy'. Attributes of social and cultural systems located in institutions, power relations,

knowledge, values and belief systems influence the ability to adapt and are recognised in an emergent literature (Naess et al., 2005; Robledo, Fischler and Patino, 2004; Adger et al., 2012; Wolf et al., 2010; Dow et al., 2013). Rather than referring only to barriers, this paper views social and cultural aspects as challenges that can impede sustainable adaptation outcomes.

India is one of the most climate-vulnerable countries in the world. Its biophysical systems are highly sensitive to added climatic exposure and its population remains largely dependent on climate-sensitive sectors of the economy, with limited capacities to adapt in the face of widespread poverty, marginalisation, social exclusion and poor institutional capacity (Maplecroft, 2014; Hijioka, et al. 2014; Dreze and Sen, 2013). Geographically, the Western Ghats mountain range along India's south-western flank is classified as highly vulnerable to climatic changes (Nandakumar, 2014). Attappady is located in this region and forms an administrative division in the south Indian state of Kerala. It has experienced widespread environmental change and is home to a sizeable indigenous population. In response to severe environmental and social stress experienced during the past decades, various livelihood strategies have been adopted and promoted in Attappady. Three key livelihood strategies, namely development interventions, migration and on-farm strategies, provide the starting point from which this paper seeks to examine key trajectories and challenges to adaptation.

The paper argues that state-led development interventions provide an important coping mechanism but have not significantly contributed to the promotion of enduring adaptation trajectories; that migration is a culturally and socially differentiated phenomenon which is not available as an outlet to some population segments; and that the sustainability of adaptation towards market-driven, perennial cash crop (plantation) agriculture is questionable.

2. Adaptation, livelihoods and socio-cultural processes

The socio-economic impacts of climatic change are varied and are documented to lead to livelihood disruption, occupational and income loss, reduced wellbeing or premature death – effects that are unequally distributed across societal sections (IPCC, 2014; Ribot, 2010). Rural dwellers in developing countries in particular, experience additional pressures in their day-to-day

life (Francis, 2000). Adaptation to such change is a complex process, embedded in a fluid climate–society relationship, which remains subject to a continuing debate on meaning and interpretation. Adaptation responses are closely linked to the way in which the problem is understood; that is, what generates vulnerability to climate change? The IPCC (2014:5) proposes a definition of climate change adaptation as: 'a process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities'. This paper goes beyond seeing adaptation merely as a response to climate stimuli in a separated human–environment system; adaptation is understood as being part of an existing vulnerability context which is premediated by historically conditioned and scaled, socio-economic, cultural and ecological factors. Environmental change (including climate variability and change) emerges as one of the stressors that dynamically interacts with social systems and potentially amplifies existing vulnerability patterns or creates new configurations. In a natural science framing, adaptation to climate change is more concerned with homogeneous, quantifiable limits, costs and benefits, and with responses concentrating on techno-managerial solutions (O'Brien and Barnett, 2013). Barriers and limitations to adaptation are accordingly defined and located. A contextual framing provides for qualitative analysis of these and acknowledges the importance of existing social and cultural processes in understanding and framing adaptation responses (O'Brien et al., 2007). In this sense, vulnerability and adaptations are linked to the existing development context and its ecological boundaries. This means – given that climatic changes are subject to a degree of uncertainty – that adaptation should also seek to address present climate variability and vulnerability instead of purely concentrating on linearly projected, prospective changes.

The literature concerning livelihoods identifies different strategies adopted by households to cope with or adapt to livelihood stresses, and is widely used in social vulnerability analysis (Adger and Kelly, 1999). A livelihood 'comprises the capabilities, assets (including both material and social resources) and activities required for a means of living' (Scoones, 1998:5). Pursued strategies can relate to agricultural extension or intensification, livelihood diversification and migration. For instance, severe and persistent drought can prompt family members or households to relocate to other areas in search of alternate livelihood options. Livelihoods research has played an important role in examining how and why different actors and institutions have responded in varied ways to

foster livelihood security – or why they have not (Ellis, 2000; Elmqvist and Olsson, 2006; Niehof, 2004).

A distinction is frequently drawn between coping and adaptation. While intrinsically related, both also exhibit differences. One distinguishing feature is the tempo-spatial scale of the processes that they describe respectively (Smithers and Smit, 1997). Coping is a process that can involve days, months or a few years; adaptation can involve longer timescales. For example, changing agricultural systems in response to climatic changes can take decades, while responses to individual climatic events can involve shorter periods. At the same time, coping processes are facilitated by adaptation. By strengthening coping abilities, requirements for adaptation can potentially be reduced (Eriksen, Brown and Kelly, 2005). Some authors (Adger, 2006) see adaptation as a transformation of the framework within which adaptation takes place. Adaptation becomes necessary when more discernible climatic shifts are taking place; it involves changes to behaviour, institutions and socio-economic structures.

Social and cultural processes have found increasing recognition in development research with respect to governing, mediating and augmenting the access to livelihood capitals[1] and influencing livelihood outcomes and strategies (Daskon, and McGregor, 2012; Daskon and Binn, 2010; de Haan and Zoomers, 2005). In similar vein, they play an important role in climate change adaptation. Culture is composed here of the totality of art, symbols, language, rituals that are intermeshed to create a common (yet possibly differentiated) identity, values, gives meaning to a place and flows into collective decision-making (Suchman, 1995). Climate change impacts can influence or obviate traditional livelihood practices, such as hunting in the Arctic (Furgal and Seguin, 2006). Cultural aspects also influence adaptation pathways by effecting socially differentiated decision-making (Adger, 2012). Nielsen and Reengard (2010), in a study in Burkina Faso, elucidate that 'cultural sensitivities' can give rise to heterogeneous adaptation pathways, exhibited through non-linear actions by different community members and play a particularly important role when it comes to looking beyond a short-term coping ability.

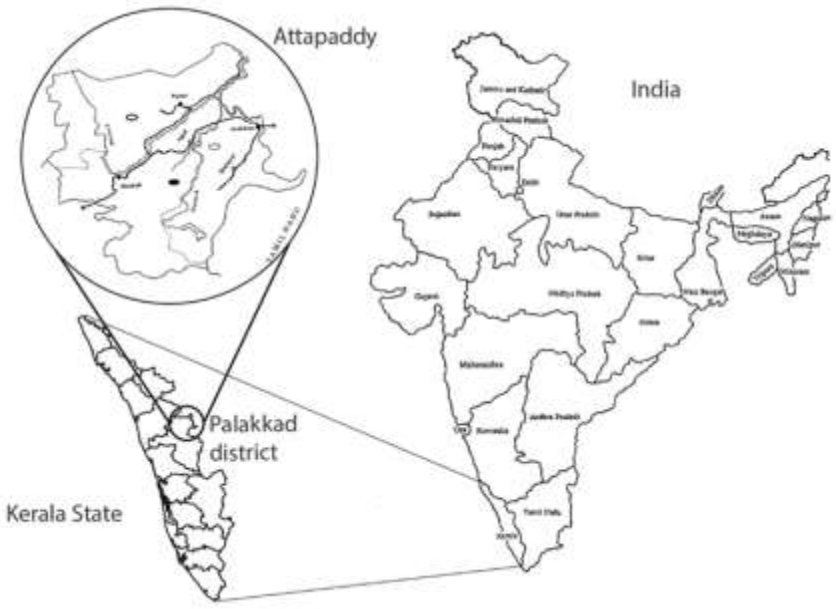
[1] The different types of capital mentioned in the Sustainable Livelihood Framework are human, natural, financial, social and physical (DfID, 2000).

The identification of the events and processes that harm valued objects at risk are diverse, context-dependent and socially and individually differentiated with response processes and mechanisms contingent on this prior identification. Capacities to respond are in turn anchored in institutions, structures, values and knowledge systems. Social and cultural aspects thus condition the ability to appropriately respond to climate impacts and prioritise certain actions and groups over others. Jones and Boyd (2011), for example, categorises social and cultural barriers into cognitive behaviour (risk averseness), normative behaviour (unwillingness to depart from traditional cultural practices), and governance institutions (social discrimination, lack of flexibility). Connectedly, social differentiation in terms of wealth, gender or education influence vulnerability patterns and give rise to differentiated coping strategies (Cutter, 1996; Eriksen, Brown and Kelly, 2005). In contrast to biophysical limits though, Adger et al. (2009) emphasise that social barriers are 'mutable' with the right mix of political, social, institutional support and effort, and resource allocation.

3. Study area: An overview

Attappady Block is an administrative division of the south Indian state of Kerala and comprises one of 13 blocks in Palakkad district. It is located on an eastward sloping plateau in the Western Ghats hill range and borders Tamil Nadu to the east. The total land area is 745 square kilometres with a population of 69,723 people (GOI, 2014). It was declared a tribal development block as early as 1962 and is composed of three panchayats, namely Agali, Pudur and Sholayur. Agali holds nearly half the population of the Block, with the rest distributed about equally between the other two panchayats (GOI, 2014).

Figure 1. Map of Attappady



Source: Adapted from Velluva (1999)

Agriculture is the mainstay of the economy. Fruits (plantains – especially banana), coconut, spices and condiments (pepper, cardamom, arecanut, ginger), tubers, vegetables, plantation crops (tea, coffee, rubber) are the dominant crops cultivated. Traditional tribal crops are essentially rain-fed and comprise millets such as *cholam* (maize), *ragi* (French millet), *cham*a (little millet) and other pulses, vegetables and oilseeds. Mining and construction are minor economic activities.

The population is composed of a mixture of 'general' settler population sections who migrated to Attappady over the past century, and indigenous people[2]. Indigenous people, here referred to as 'tribal', are composed of three distinct communities, these being Irula, Muduga and Kurumba. Irula are by far the largest group (77 %) followed by Muduga (13%) and the more remotely settled Kurumba (10%). While they exhibit differing cultural practices and ethnic traits, they share similarities in lifestyle, agricultural practices, a historical dependence on land and forest resources for subsistence and socio-economic conditions (Menon, 1996; Kunhaman, 1981). Notable

[2] Alternatively referred to as *Adivasi*.

commonalities lie in social structures, with each of the groups having a *moopan* (village chief) and *manukkaran* (agricultural manager), the latter determining sowing season and management of crops. These are the two most important persons in the traditional social hierarchy. Some Kurumba hamlets still practise slash-and-burn agriculture in the high ranges and collect forest produce. All groups cultivate dry land crops (mentioned above), but have increasingly assimilated agricultural practices by the settler community and turned to casual labour employment (Velluva, 1999). Irula are found in all parts of the Block, while Muduga are concentrated in Agali, and Kurumba are settled in the more remote, forested highlands of the Block. For the purpose of this study, these groups are referred to as the 'tribal community'.

The general non-tribal community is also composed of different ethnicities and groups. They arrived as migrant settlers during the past century from Kerala, Tamil Nadu and Karnataka; however, no accurate figures are available regarding their relative ethnic and religious configurations. Christian and Muslims settlers come largely from the plains of Kerala while Hindu settlers are from both Tamil Nadu and Kerala. Over the past six decades, the non-tribal communities arrived in Attappady in phases, with settlers from Kerala settling on the western slopes, mainly in Agali but also in Sholayur, and Tamil settlers concentrating in Pudur and carrying with them accustomed agricultural practices from the plains, which dominantly involve cash crop cultivation (Velluva, 1999; Haseena, 2006).

The decades from the middle of the 20th century were accompanied by interventions that contributed to land-grabbing, large-scale deforestation, land and water resource degradation as well as social marginalisation and pauperisation of tribal communities (Muraleedharan et al., 1991; Velluva, 1999; Sathis, 1989; Kunhaman, 1981; Radhakrishnan, 2012; Haseena, 2006)). These echo experiences of the marginalisation of tribal communities in other areas of the Western Ghats region (Kjosavik and Shanmugaratnam, 2007).

Factors that contributed to these developments can be located in a mutually re-enforcing relationship between political economic factors and environmental change. The emergence of regional and national economies, push-and-pull factors that drove and drew migrants to the lands of Attappady as well as government policy and legislative Acts. In combination, these factors

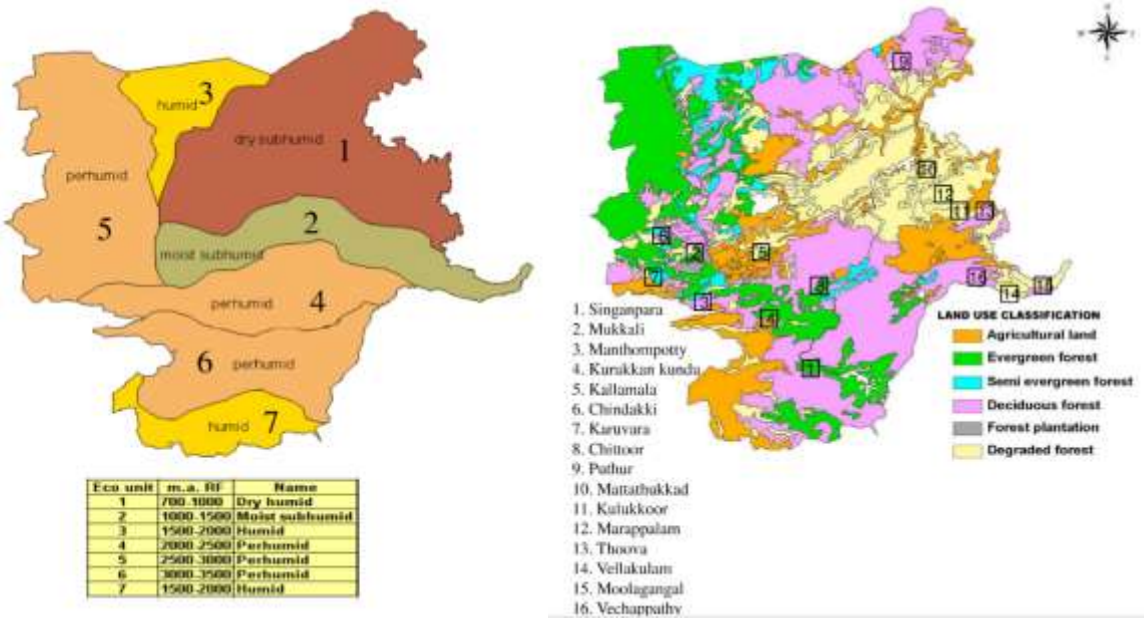
strongly influenced the life and wellbeing of tribal communities, with their subsistence economies progressively eroding. Tribal communities lost control of large tracts of customary land holdings and were pushed into more marginal lands. By 1982, 63 per cent of tribal these land holdings were estimated to be usurped (see Roazario, 2013). Socio-cultural institutions started to erode, customary land holdings changed ownership and traditional agricultural cultivation practices became increasingly difficult to pursue. Extensive environmental degradation and change coupled with marginalisation proved to be mutually re-enforcing pressure points. Extreme vulnerability concentrated in tribal communities is a central feature of the development scenario in Attappady today. Poor health, illiteracy, malnutrition and material poverty are widespread and relatively higher in tribal communities than in the other communities (Manikandan, 2014; Shaji et al., 2014).

3.1 Climate and ecology

Attappady's climate and ecology is characterised by a diverse topography, ecology and micro-climatic patterns. Geographically, the panchayats are located as follows: Pudur to the north-east, Agali on the central western side of the plateau, and Sholayur on the south-western flank. The plateau is undulating and ranges in elevation from 550 metres at its lower points, to more than 2,200 metres at its peaks. The central plateau is the most heavily populated area and has an elevation of between 600–1,000 metres. Around 51 per cent of the terrain is located there. Steep slopes characterise the landscape, and make them highly environmentally sensitive. For example, 71 per cent of the slopes have a gradient between 15–30 degrees. Rainfall patterns are diverse and vary sharply, with the dichotomy lying between the western and eastern areas of the Block as illustrated in Figure 2 (a). Rainfall patterns are closely connected to topographical diversity and location on the plateau. Annual precipitation ranges from 700 to more than 3,000 millimetres. The western parts receive the bulk of precipitation from both the south-west monsoon and parts of the retreat (north-east) monsoon. Consequently, this part of Attappady is wet, moist and humid for most part of the year. As illustrated in Figure 2 (b), majority of the agricultural lands are located in the central valley and western flanks. The eastern parts, on the other hand, receive the bulk of precipitation from the retreat monsoon and are drier and hotter throughout the year. The dry season in the eastern section lasts between five and seven months and this is where most of the degraded forest land is located.

Figure 2. Different ecological zones and land use patterns in Attappady

(a) (b)



Source: Radhakrishnan (2012)

Temperatures average around 17°C and differ seasonally, with a hot and dry summer between March and May, and a cooler winter in November to December. A forest cover of 83 per cent in 1957 was reduced to 20 per cent by 1996; this was accompanied by a change in micro-climatic patterns combined with land resource degradation (Kunhaman, 1981; Radhakrishnan, 2012). Apart from general land quality degradation and attendant impacts on agrarian practices, changes in precipitation have been recorded from the 1970s onwards with droughts, especially in its eastern parts, occurring more frequently (Sathis, 1989). The two most important rivers are the eastward-flowing Bhavani and Siruvani, which are fed by a number of smaller tributaries. The administrative division in which Attappady lies has been classified as one of the two districts in Kerala that are highly vulnerable to climate change, with expected temperature increases ranging from 2 to 4.5°C (Nandakumar, 2014).

3.2 History of development interventions

In the context of these socio-economic and ecological conditions, development interventions orchestrated by state actors have had a long history in Attappady; they leave behind an archetype of programmatic ideas, approaches and institutions. After its establishment as a tribal development block in 1962, Attappady's development was guided by the special provisions for tribal communities in the Constitution of India. The accent of interventions lay on the provision of basic access to services catering to the specific needs of a 'backward' area and its tribal inhabitants. Interventions initially centred on social and physical infrastructure by developing roads, irrigation, educational and healthcare facilities. Representatives of tribal hamlets, in coordination with the administration, shaped these projects. In 1975, the Block was re-constituted as an integrated tribal development project (ITDP) which was meant to alleviate some of the deficiencies of the earlier interventions by focusing on an integrated rather than a sectorial approach. For this purpose, all activities in the Block were coordinated through the nodal ITDP. Some 22 departmental activities from agriculture, financing, electricity to healthcare, fell under its authority – under the leadership of the District Collector and a Tribal Advisory Council. Subsequently in the 1970s and 1980s, livelihood diversification and natural resource management programmes started to become part of development interventions – directed by the Integrated Area Development Approach Rearing of livestock, marketing of agricultural produce, irrigation projects and the introduction of cooperative farming societies followed and resulted in the establishment of 18 cooperative farming societies and nine dairy cooperatives. In the 1980s, earlier governing structures were replaced by district-level working groups, headed by political representatives and local officials. These sidelined earlier structures that drew on the representatives of tribal institutions (Sasidharan, 2005). In the 1990s, national-level rural development programmes included various employment generation, self-employment, health and agricultural schemes. These included the Integrated Rural Development Project, Jawahar Rozgar Yojana, Million Wells Scheme, Attappady Valley Irrigation Project, Integrated Wasteland Development Project, and Swarnajayanti Gram Swarojgar Yojana or Indira Awas Yojana. In 1996, as part of the 'Peoples' Planning Campaign' in Kerala, the decentralisation process granted more autonomy to local self-governing institutions in development planning, that is, to the block, gram panchayats and ward units. This move once again changed institutional dynamics and development planning.

The most comprehensive development project in Attappady to date commenced in 1996, under the head of the Attappady Wasteland Comprehensive Environmental Conservation Project, implemented through the Attappady Hills Area Development Society (AHADS) based in Agali (AHADS, 2010). This was a 219 crore INR[4] project financed by the Japanese Bank for International Cooperation and aimed to provide employment, eco-restoration and promote the active participation of tribal hamlets in development activities. For this purpose, a new set of institutions was created at hamlet, macro and micro-watershed levels. For instance, each hamlet was entrusted with a hamlet development committee (*ooru vikasana samidhi* or OVS) to plan, coordinate and implement development projects in its locality. The project started in 1996 and ultimately ceased in 2010. Following the AHADS project, the Mahatma Gandhi National Rural Employment Guarantee Act[5] (MGNREGA) was instituted in 2006 and coexisted with AHADS for a brief period. The MGNREGA (NREGA, 2005) is a national-level rural development scheme and has been the most significant development intervention in Attappady over the fieldwork period. It works through the existing decentralised governance structures, as well as some of the institutions created (namely OVS) under AHADS, to provide employment, foster agricultural development, social inclusion and strengthen decentralised governance institutions. In conjunction with the MGNREGA, another 100 crore INR[6] plus, special package under the National Rural Livelihood Mission (NRLM) was announced as recently as 2013/14 to promote self-employment, rejuvenate agriculture and extend basic healthcare services to Attappady. Overall, a brief characterisation of developmental intervention displays a shift in the approach from 'top-down', technical interventions towards local democratic institutions, incorporating a formal acknowledgment of cultural pluralism and natural resource management.

[4] Approximately USD 34 million.
[5] Guarantees every rural household 100 days of employment against a minimum wage, if demanded (NREGA, 2005).
[6] Approximately USD 15 million.

4. Methodology

Data collection was carried out over different timespans. Semi-structured interviews, key informant interviews, participant observation and focus group discussions provide the primary data set as illustrated in detail in Figure 3. One of the initial research purposes of the larger project which the author is part of, was to study the role of a governmental scheme (MGNREGA) in the Block with respect to vulnerability reduction. As a result, semi-structured interviews were drawn from the scheme's participants. This method presents certain limitations, such as not capturing non-participants in a dedicated way. However, half of the households in Attappady are formally registered with the scheme[7], with both tribal and non-tribal populations being represented. This also has the advantage of enabling the study of a development intervention as a coping strategy, one of the aims in this study. This data set is supplemented by key informant interviews, which were conducted with key resource persons who have an overview of contemporary and historical development together with environmental issues that affect the Block. Key informants included community leaders, politicians, social activists, academics, government officials and local residents. Topics of discussion were loosely structured around an open-ended interview guide and centred on development interventions, such as the MGNREGA and AHADS, local climatic changes, agricultural and socio-economic issues. A snowballing technique helped in locating appropriate respondents. Five focus group discussions were held in different locations of the Block. Location was an important factor when deciding on these. Given the Block's demographic and ecological diversity, these were held in the eastern, western and central part with a view to gain insights on spatially distributed development concerns. A methodological overview is provided in Figure 3 below.

[7] Registration does not necessarily translate into effective demand for work.

Table 1. Research methodology

Methods	Data characteristics			
	Data characteristics	Temporal span	Quantitative density	Data acquisition time
Semi-structured interviews	- Household socio-economic characteristics - Livelihood strategies - Perceptions and data on the MGNREGA - Climate change perceptions	Contemporary issues 2006–2012	190 conducted	November 2011–April 2012
Focus group discussions	- Agricultural, development and land use issues	February 2013	5 focus group discussions	February 2013
Key interviews	- Historical developments - Environmental change - Agricultural issues - Policy responses	Contemporary, past 60 years	25 key informants	November 2011–April 2012 December 2012–February 2013
Participant observation	- Daily life and practices - Participant as observer	Contemporary issues	-	November 2011–April 2012
Secondary data	- Official documents - development history	1900s–present	-	

5. Research findings: adaptation trajectories and challenges

5.1 Development interventions as coping strategies

During the fieldwork, it became apparent that government schemes play a key role in the coping strategy of vulnerable people, with perceptible differences in engagement existing between tribal and non-tribal households. Pudur hosts the most unfavourable climatic conditions in the Block, with a drier climate, rainfall variability and extensive land degradation. Limited agricultural

operations with few other employment options exist. Pudur has also the highest tribal community share, within the respective panchayats. From 2013–2014, 83 per cent of the workforce in Pudur was engaged in the MGNREGA, compared to 53 per cent in Sholayur and 50 per cent in Agali (NREGA, 2014). Pudur had 69 employment days, with 61 days in Agali and 56 in Sholayur[8] during that timespan.

Agali has the highest share of non-tribal communities and its environmental conditions are more conducive to viable agricultural operations. Focus group discussions held in the respective localities revealed the following[9]. In Agali, non-tribal respondents mentioned that they could draw on a wider portfolio of coping mechanisms such as migration, kinship networks, church groups, access to formal and informal credit sources or draw on their asset bases. Employment in government schemes does play a central role in coping strategies , but is just one of a subset of avenues. On the other hand, in Pudur[10], both tribal and non-tribal population sections expressed their pronounced reliance on government employment programmes for sustenance. Social differentiation also persisted there. For non-tribal households (as was the case in Agali), stronger social structures and horizontal economic linkages enabled the diversification of income sources. Social and economic structures thus provide a degree of resilience which is less pronounced than that of tribal households. Tribal households exhibited a much stronger reliance on government employment. According to one tribal respondent[11], 'For many months there is absolutely no other work besides the 100 days employment[12] scheme'. Weaker capabilities and diversification options can be explained by limited human capital (high rates of illiteracy[13]) and limited asset bases, ill health among men (related to substance abuse, especially alcohol) leading to increased health costs and limited employability, limited access to formal credit, and widespread, poverty-like conditions in tribal villages, all of which restricted support from social networks. Similarly, in the absence of significant agricultural activities, even casual employment options on farmsteads are not available during the lean season. In Agali and Sholayur, tribal households exhibit similar tendencies of

[8] Sholayur has an approximately equal distribution between tribal and non-tribal communities.
[9] Group interview: 6.2.2013.
[10] Group interview: 9.2.2013.
[11] Interview: 19.3.2012,Mulli, Pudur.
[12] '*thorilnurruppu*' is a colloquial reference to the MGNREGA in Kerala.
[13] The last authoritative literacy count puts literacy rates at 38% of the tribal community (Census, 1991) with more recent reports stating 62% were functionally literate (The Hindu, 2013). However, the latter number is viewed critically by this author.

reliance on state support – but during the agricultural season at least, more casual labour opportunities existed, which helped to diversify income sources.

Another indicator for the reliance on governmental support to tide over livelihood crisis is the place that the Public Distribution System (PDS)[14] holds. More than 70 per cent of tribal households in Attappady fall into the 'below poverty line' (BPL) category (KILA, 2008). Respondents emphasised that an important source of food security was the purchase of subsidised rice from ration shops. By contrast, the number of non-tribal households who are eligible for this subsidy is significantly less. Non-tribal respondents commented that the quality of the rice sold was poor; they preferred not to purchase it and were rarely obliged to use it. It presents an option but it is not a necessity.

As the fieldwork progressed, it became apparent that – rather than being a temporary and reactive coping strategy or merely a supplement to household income – state support, whether through subsidised food or employment, exhibited signs of a 'reliance' relationship between large sections of the tribal community. This relationship of reliance between the community and the state was planned and not temporarily confined to environmental and economic stress events. This points to general conditions of duress, anchored in interacting political economic factors and ecological conditions, but feeding into the question of the role that state-led developmental interventions may or may not have played. Attappady, as mentioned, has been subject to a host of these interventions over a considerable period of time. Apparently these have not addressed structural barriers that prevent adaptation and built adaptive capacities, such as low skill levels, unequal access to assets and capital, and location of tribal hamlets in climate-vulnerable, exposed environments. The fact that these interventions have not successfully removed such barriers, raises the spectre of whether the 'historical baggage' of interventions has also affected the engagement and expectations of the intended beneficiaries with respect to state institutions, and thereby has limited the scope for future interventions. Could this add challenges to adaptation by adversely affecting the trust and

[14] The PDS provides subsidised rice in a monthly allocation to BPL and APL (above poverty line) card holders. BPL card holders receive 25 kilograms of rice at 1 Rupee.

legitimacy relationship? Also, have coping activities undermined or disincentivised adaptation activities and potentials?

State institutions can provide opportunity structures that enable and improve access to social, political and economic assets and capital. The MGNREGA has been documented as playing an important role in tackling proximate vulnerability patterns of marginalised people in Attappady and arguably has potential to foster adaptation processes; at the same time, however, it is not transformational and its long-run outcomes still need to be discerned (Adam, *forthcoming*). Beyond the immediate functioning of governmental programmes, a history of unmet expectations and underachievement has added to a palpable sense of despondency and 'intervention fatigue'. The trusteeship relationship demonstrated by the government in drawing up schemes specifically for the tribal communities, also amplifies tendencies for social stigmatisation of these communities. An often repeated assertion that the researcher encountered in the field was 'this [MGNREGA] is just another government scheme, we have seen them coming and going' while at the same time substantiating that 'we need more help from the government'.[15] The reliance relationship has become ingrained in the cultural matrix of the intended beneficiaries and has come to define expectations of a persistent inflow of aid as a crucial lifeline – but it is mixed with reservations, apprehensions and lack of faith in programmatic approaches leading to significant improvements in the quality of life.

A tribal social activist puts this state of affairs eloquently: 'Our children don't know much about our land, people and traditions anymore; basically they know us [tribal people] as people of *ration ari* (ration rice). I don't want my children to look upon us and think of our people and themselves in that way'[16]. This statement also has an intergenerational aspect, in that a generation grew up with external support providing a critical lifeline for sustenance. This adds to the question of whether interventions have only addressed symptomatic causes for distress and not encouraged more encompassing changes that foster substantial empowerment and allow for the diversification of household income away from government support, possibly even having deflected from processes of marginalisation.

[15] Interview: repeated in variations by a number of tribal respondents.
[16] Interview: 7.2.2013, Sholayur.

Programmes have repeatedly promised the promotion of 'sustainable livelihoods' and raised expectation levels. For example, the AHADS mission objective speaks of 'halting the processes of ecological and social degradations and improving the livelihood base of the affected [tribal] communities' (AWCECOP, 2008:5). The project, seeing itself as a role model for community development (AWCECOP, 2008), became dysfunctional in 2010. Positive experiences have been documented, especially with respect to water resource development and its participatory institutions (Vishnudas, Savenije and Zaag, 2012). But instead of being self-sustaining, the project and its created institutions became largely dysfunctional, with outcomes staying within the realm of physical infrastructure build-up (visible today) and some ecological improvements (Takaki, 2012). When respondents were asked about User Associations (created as micro-watershed development committees under AHADS), they were not even clear what had happened to these associations or whether they were still in place: 'That was under AHADS; they don't function anymore – or do they?' A question posed by the researcher returned as a counter-question as to whether the researcher could provide clarity on the status of this unit. After AHADS was wound up, its previously created institutions were sidelined and its employment provision ground to a halt. OVS units have been integrated with the MGNREGA since then, but are now working under conditions that are embodied in MGNREGA guidelines, rather than those of AHADS. Concurrently other schemes have existed or come into existence with various agencies, grassroots organisations and institutional bodies entrusted with their planning and execution. Similarly, the recently re-christened National Rural Livelihood Mission, with a new set of institutions, aims to 'reduce poverty among rural BPL by promoting diversified and gainful self-employment and wage employment opportunities which would lead to an appreciable increase in income on a sustainable basis.' (NRLM, 2015). Given the maze of institutions and their frequently changing composition, there exists confusion as to who does what, for what purpose. These magnify and add to a trust deficit between state and its intended beneficiaries, an attribute that is otherwise important for interventions to be functional and efficacious.

Another example is related to the activities of the AHADS project. Under a housing project tied to it, tribal hamlets received concrete houses, which replaced traditional huts of local material. Respondents mentioned that the assistance helped them to better withstand storms – which had become more vicious and frequent. On the other hand, this coping mechanism deflects from other

causes of exposure and targets locations in fragile environments – with extreme climatic events set to amplify. Thus one could argue that coping has potentially disincentivised other adaptation pathways.

6. Migration

Migration is shown to be a 'rational' response strategy to spread livelihood risks and has come under renewed interest in the climate change adaptation literature (Piguet, Pécoud and Guchteneire, 2011), for instance with respect to rising sea levels in Bangladesh (Salauddin and Ashikuzzaman, 2011). Migration is an important livelihood strategy for vulnerable population sections to supplement meagre incomes and escape chronic conditions of deprivation (Sundari, 2008; Barbora et al., 2008).

At the beginning of the 20th century, Attapaddy was essentially inhabited by tribal communities. Subsequently, it has experienced successive waves of in-and-out migration, driven by a combination of push-and-pull factors. Poverty and land scarcity in places of origin, ready land availability in the hilly region of the Western Ghats and conducive government policy contributed to in-migration (Velluva, 1999). The 1960s in particular witnessed a large number of settlers arriving, with a near doubling of the non-tribal population over a decade. Concomitantly, Attappady witnessed the most intense phases of land appropriation, deforestation and environmental resource base degradation. Muraleedharan et al. (1991:41) describe the landscape they witnessed in the early 1990s as 'a typical example of unplanned human settlement in a forested area which has turned the "green hell" to a "red desert".' The social and environmental pressures generated over the previous decades had apparently met a threshold level in the 1980s, which made it unprofitable or too difficult for the recently arrived settlers to stay on in Attappady. Population numbers (see Table 2) show a massive outmigration of the non-tribal communities over that time. Nearly 8,000 people (or 25%) emigrated between 1981–1991. The tribal population, on the other hand, continued to stay and grow in number. It was only in the 1990s that the tribal population stagnated in number and reduced slightly. According to a researcher[17] working in the

[17] Interview: 13.12.2012, Trivandrum, Kerala.

area in the 1980s and 1990s, one of the factors that contributed to this demographic trend was a high mortality rate (ill health and malnutrition), but not significant out-migration. The mortality rate was attributed to ill health and lack of access to food (in other words, malnutrition) expressed through a time-lag.

Table 2. Demographic and migration trends in Attapaddy from 1951–2011

Year	Tribal population	% of tribal population	Non-tribal population	% of non-tribal population	Total population
1951	10,200	90.92	1,100	9.68	11,300
1961	12,972	60.45	8,489	39.55	21,461
1971	16,536	42.21	22,647	57.79	39,183
1981	20,659	33.00	41,587	67.00	62,246
1991	28,711	46.28	33,322	53.72	62,033
2001	27,121	41.00	39,050	59.00	66,171
2011	30,460	44.00	39,263	56.00	69,723

Source: GOI (2014)

What explains the difference between the socially differentiated migration patterns? The settler community retains kinship ties in their former place of residence that provides a social network to return to, or to draw support from in case of shock or crisis. Kinship ties are usually maintained through marriage, extended family relations and religious group affiliation. Spouses come from the respective community, which is regionally distributed. For example, Christian settlers come from the central Travancore region (south-central Kerala), Muslim settlers from Mallapuram (North Kerala) and Tamil settlers from around Coimbatore and Theni. The women subsequently settle with their spouses in Attappady but maintain ties with their families 'back home'. The majority of non-tribal respondents are literate and possess the necessary human capital (education, skills) to navigate themselves in new surroundings and seek productive employment. This does not mean that they are necessarily 'well-off' but conditions and opportunities for social mobility exist. Permanent relocation, as happened in the 1980s, or temporary relocation in the event of a stress situation, are common. Household members (children, spouse) shift to family members in their native places to relieve pressure on household economies during prolonged drought periods, for instance. Labour migration to nearby industrial and commercial centres of Coimbatore, Mannarkad or Palakkad offers a feasible and accessible avenue for income diversification. Coimbatore is approximately 60 kilometres from Attappady and is well connected by road.

Respondents stated that they usually work in the service sector, in industrial units or the construction sector. Place attachment does not appear to be an important motivation for the non-tribal communities to remain in Attappady. This is more evident with the second and third generation of settlers. Even though they were raised in the area, they usually chose to migrate when possible – normally for higher studies or non-agricultural employment. A parent[18] substantiated this: 'The agricultural situation is not easy in Attappady; it is better for our children to study and settle in one of the big towns'. Female respondents who married into families in Attappady elaborated that, given a choice, they would prefer to be elsewhere. As a respondent in Sholayur[19] stated, 'I came to Attapaddy because of my husband. It is okay here, but there exist few facilities and I would prefer to be in Coimbatore'. The migration option also explains the stagnation of the non-tribal population during the 1990s, with barely any population growth recorded.

On the other hand, place attachment, as with other indigenous population groups worldwide and in India (Mortreux and Barnett, 2009; Kjosavik, 2010), remains an important aspect of community and individual identity with the tribal population. Religious and cultural practices are closely interwoven with the landscape. The Malleshwaram peak juts out at a height of 1,664 metres at the centre of the Block and is visible from most parts of Attappady. The Irula worship it as an abode of Shiva and conduct festivals around the time of Shivaratri[20] during February–March. Its peak is worshipped by all tribal communities in differing forms, and the peak is scaled as part of ritualistic practices. Forms of animism where flora and fauna are worshipped through dance and ceremony, have traditionally been shared by all tribal communities in Attappady. The close affinity with the natural environment is interwoven into a moral economy that regulates life and death, as well social and economic practices. When a tribal labourer in Sholayur was asked why he does not want to leave, even if he faces intense hardship (in the context of unemployment), he replied, 'Attappady is my home and I will not want to leave it, it is the place our ancestors lived and I will continue to stay here'[21]. Migration is consequently not considered a serious option or outlet, even in a crisis situation. It would imply a break with routine life rituals that provide meaning and identity. An intergenerational aspect exists here though. Place attachment is more important for the older

[18] Interview: 24.2.2012, Kalamolla, Agali.
[19] Interview: 10.3.2012, Thekamake, Sholayur.
[20] Annual festival to celebrate the Hindu god 'Shiva'.
[21] Interview: 16.3.2012, Oorunchala, Sholayur.

generation, who are accustomed to a more 'intact' natural environment (which has been degraded for example through deforestation) and traditional socio-cultural institutions tied to it. On the other hand, younger people, especially the generation that was born in the 1990s with globalisation and economic integration holding sway, are not untouched by modernity and have a different relationship with their social and ecological environment. Still, a lack of human capital (that is, educational attainment) prevents an integration with the market economy, with illiteracy remaining widespread. A large number of children study in hostels outside Attappady; young people have at least attempted to seek employment in different parts of Kerala or Tamil Nadu. A central factor that poses a barrier to migration is widespread discrimination faced by people of tribal origin. Deeply entrenched discrimination and social stigma in Indian society towards 'primitive tribals' impedes their social mobility. Children and young adults who have been to the plains, experience regular discrimination and harassment, ranging from sexual exploitation to social castigation. A young girl who studied in a college in Palakkad was adamant about not returning there: 'Fellow students call me names because I am an *Adivasi* and I have to stay in a hostel with no family and few friends'[22]. This stigma contributes to an impression of the outside world as not welcoming. A shared future with better opportunities away from Attappady is not considered a preferred or viable option – even in the face of environmental and economic stress, as experienced in Attappady.

7. On farm strategies

The agricultural sector remains the most significant economic branch in Attappady. Agricultural cultivation patterns, productivity and system adaptations are influenced by a complex set of factors and processes. They involve a dynamic interaction between market economies, knowledge systems (traditional vs modern), social organisation (culture) and biophysical base conditions.

Ethnic variations have played a central role in determining land use and cultivation patterns. The key distinguishing factor in Attappady lies in the extent of market integration between the tribal and non-tribal communities. Non-tribal households concentrate on the cultivation of cash crops that are of limited use for household consumption. These are banana, coconut, betelnut, cashew, pepper and spices, sugarcane and other cash crops. The tribal population traditionally pursue the

[22] Interview: 16.1.2012, Vadakottatara, Agali.

cultivation of rain-fed crops such as pulses, oilseeds, legumes and, to a limited extent paddy, all of which are largely intended for household consumption. However, a perceptible shift has been taking place in land use patterns, away from subsistence/food crop farming, towards cash crop cultivation, with perennial plantation crops recording the strongest growth over the past two decades (Kumar et al., 2012; AHADS, 2010; GOK, 2011). As one respondent[23] noted: 'Thirty years ago we have not seen so many plantations everywhere'. The amount of agricultural land under cultivation has shown swings with an overall, sharp decline from the 1970s. In 1971, 187 square kilometres were classified as agricultural land; in 1989, this figure had changed to 52 square kilometres; in 2005, the land under cultivation was 75 square kilometres (CWRDM, 1994; Kumar et al., 2012). Qualitatively, an overall reduction in seasonal food crops and a significant growth in plantation crops can be observed. The three most important crops (by acreage under cultivation) are banana and plantains, coconut, and arecanut (GOK, 2011). Banana and plantains alone take up an area of 7,911 hectares – by far the largest quantity of cultivable land. Altogether, pulses take up only 1,937 hectares (GOK, 2011). The former has also seen the most significant proliferation among plantation crops. When entering the central valley from the western side of Attapaddy, with the Bhavani and Siruvani Rivers snaking through the plateau eastwards, the landscape has come to be marked by parcels of land that grow banana, plantain and coconut (see Figure 3). The land parcels are usually located along rivers and rivulets to enable easier access to water resources. After the most fertile land is taken up for cultivation, more marginal lands, located in the higher ranges, have also come under cultivation.

What has contributed to these developments? Attappady lies in proximity to regional market centres in Kerala and Tamil Nadu. Demand from processing industries and urban consumers ramped up market prices. Subsidy regimes by the government in Kerala encourage cultivation by lowering the price of essential inputs such as pesticides and fertilisers. Similar subsidy regimes exist for pump sets and borewells, which incentivise irrigated cultivation. The dominant perennial crops can be grown throughout the year with comparatively less labour input – irrespective of seasonal rainfall variability. Irrigated agriculture thus becomes an attractive on-farm diversification strategy.

[23] Interview: 5.4.2012, Anaikatty,Pudur.

Figure 3. Showing agricultural landscape in Attappady

(a) **(b)**

Agricultural landscape: (a) along the Bhavani River in Pudur; (b) in Sholayur panchayat, interspersed by coconut and banana plantations.

Rain-fed crops, traditionally cultivated by the tribal population, have by contrast witnessed a sharp decline. A third of the tribal respondents (36%) in the semi-structured interviews stated that they had stopped cultivation over the past decade. The most frequently cited reason for this was lack of seasonal rain. Traditional cultivation patterns are rain-fed and depend on timely water availability. Summer rains prior to the monsoon in May have played an important role at the time of sowing in late Spring when cultivation patterns were integrated with traditional, seasonal calendars. Also, a second growing season used to occur from October onwards, but rains have become less regular. Changed climatic patterns and associated aspects of traditional knowledge systems have consequently become partly redundant. Respondents confirmed that rains have become less frequent or entirely absent for consecutive years. While spatial differentiations exist, especially consecutive drought years in Pudur, respondents from all panchayats (tribal and non-tribal) agreed that rainfall quantity has reduced and that longer, more frequent droughts are observed.

Respondents have attempted to reduce their exposure to the lack of seasonal rains by reducing their focus and giving up on seasonal crops, or instead by shifting to intercropping patterns dominated by banana/plantain cultivation and other irrigated, perennial crops. This choice is

conditioned by ecological and economic factors, but also flows into social and cultural preferences that prioritise market value over home production.

Land availability was not the main issue that obstructed agricultural cultivation among tribal respondents, as land ownership is approximately three acres per household; instead, land quality and location were the major obstructions. Lands in their effective possession were usually located along higher slopes, difficult to access and of poorer quality, needing more investment to use productively.

Another strategy to address lack of seasonal rains and associated income shortfalls has been to lease or sell land to absentee landowners, a practice continued to date. The absentee landowners subsequently invest in capital-intensive irrigated agriculture. In one village in Pudur which the researcher visited, Chodipate *oore*, land originally belonging to the village and directly adjacent to it was fenced off for coconut cultivation with a borewell providing water, while local residents did not have access to a water source in the village. No recent, accurate figures on these transactions exist since they are illegal[24], but this is a common practice witnessed in all parts of Attappady. Tribal community members sometimes work as casual labourers on these farmsteads, but since their require less labour input, provides only a limited amount of work. The researcher also observed a number of worksites under the MGNREGA where participants worked on such farmsteads – effectively subsidised by the state.

While the livelihoods literature emphasises the importance of market integration (Ellis, 2000), the choice of what type of marketable crop to integrate poses some qualitative questions. The case of banana/plantain cultivation illustrates some dilemmas and questions regarding sustainability and negative externalities. Perennial crops are water-intense and need continuous irrigation, with most banana varieties for example, requiring water every three days over the growing period. Water scarcity is not a new phenomenon in the Block; current trends in cultivation amplify them. Borewells and electric pumps draw water from already decimated streams and considerably reduce downstream water availability and groundwater tables, in effect contributing to water depletion. A recent report attributes cultivation practices to reducing the Bhavani flow to a 'trickle' (Shaji,

[24] Tribal land is not transferable under the Kerala Scheduled Tribes Act (Restriction on Transfer of Lands and Restoration of Alienated Lands), 1975.

2015). Given the steep slopes of the terrain, water runoff is substantial with limited groundwater recharge possibilities (Kannan and Mathew, *unknown*). Investments in monoculture plantation require inputs in the form of pesticides and fertilisers. Given their close proximity to surface water sources, these re-enter the water cycle (streams) and pollute drinking water sources. Tribal people have a cultural preference for *pache vellam* (drinking directly from the stagnant or torrid water sources) as it 'tastes better'. In the absence of a functional, treated water supply, this has negative health consequences and chronic diseases are prolific. However, given the lack of alternatives, drinking polluted water seems to be a necessary choice. A resident[25] who accompanied the researcher to a stream stated: 'We need organic agriculture and not *vazha krishi* [banana cultivation]; they pollute our water streams and make people sick … a lot of people complain about headaches and stomach problems'.

Attappady is a wildlife corridor for elephants. Bananas/plantains are a highly attractive food source for them, and raiding of farm tracts is a common experience (after lack of water, this is the second most commonly cited source of agricultural loss). While cultivators complain about the prevalence of wildlife and their negative impact on the agricultural sector, a respondent elaborated: 'Elephants have always been part of our [Attappady's] landscape and that they come here in search of food is nothing new'[27].

8. Conclusion

The paper explored key adaptation trajectories and challenges in Attappady. It finds that development interventions play a crucial role in the coping strategy of vulnerable people, specifically that of tribal communities. On the other hand, reliance on these interventions exemplifies a failure of past interventions to successfully remove barriers to adaptation, which are anchored in unequal land distribution, lack of social and human capital and environmental change and degradation. Economic and environmental pressures continue to exert disproportionate and prolonged pressure on vulnerable population segments which are not confined to individual stress

[25] Interview: 1.2.2013, Thavalam, Agali.
[27] Interview: 5.1.2012, Sambarkode oore,Agali.

events. Also, the historical underachievement of these interventions to deliver promised changes[28] have negatively affected the trust and legitimacy relationship with state institutions. Some of the side effects of coping measures promoted can similarly prove to be a disincentive to lever more enduring changes, as illustrated by activities of AHADS. Arguably, state-led development interventions play only one part (albeit an important one) in the complex vulnerability context of Attappady, and these efforts illustrate a lack of achievement to institute enduring changes that help people to adapt to a changing social and ecological environment.

Migration – an otherwise well-documented 'outlet' in the face of economic and environmental stress – is a socially differentiated phenomenon, available and resorted to by the non-tribal communities in Attappady. Cultural attitudes, discrimination and lack of human capital severely restrict social mobility of the tribal community. In effect, migration does not constitute a practised or viable livelihood strategy for them. On-farm adaptation strategies mediated by climate variability, market forces and social and cultural factors, have resulted in a shift towards perennial cash crop cultivation. This is a strategy that appears to be unfit for the environmentally sensitive spatial context of Attappady. It leads to overexploitation of resource bases, furthers the marginalisation of tribal communities and is not adapted to local ecological base conditions. Rather than a lever for adaptation, it represents a case of maladaptation with highly problematic, long-term consequences.

The findings presented in this paper highlight some of the complexities and dilemmas which confront interlinked adaptation and development choices. The tribal communities appear to be wedged between tradition and modernity, unable to find their place in either sphere. The traditional (social, cultural or ecological) environment has undergone rapid changes, while at the same time modernity with its demands and conditions (skills, knowledge, capital) is not fully accessible. Amplified by environmental changes, these quagmires are brought to the fore and also highlight contradictory approaches and ideas on how to address these challenges. For instance, the MGNREGA attempts to facilitate a return to traditional agriculture by providing labour and resources to develop traditional land holdings, efforts that are constricted by underlying climatic and political–economic factors (Adam, *forthcoming*). On the other hand, government policies also

[28] Li (2009) explores issues of 'development failure' in depth with her Indonesian case study, drawing parallels to Attappady's case of well-intentioned projects failing due to the apolitical and flawed nature of interventions.

amplify 'modern' agriculture as expressed by subsidy regimes and land use patterns. In conjunction with operation of market forces, adaptation responses can be misaligned with local development constraints and realities, with tendencies to further marginalisation. Attappady's case thus presents a microcosm of development and adaptation complexities that leave no easy answers.

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