The Geographical Journal / Volume 186, Issue 1

REGULAR PAPER | Open Access

Moving in and out of vulnerability: Interrogating migration as an adaptation strategy along a rural–urban continuum in India

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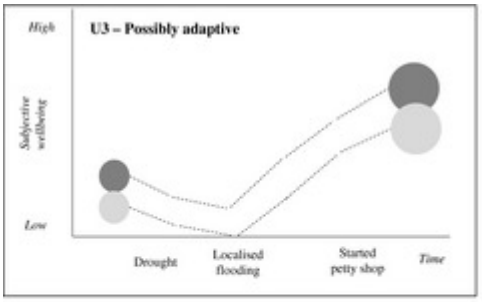
First published: 13 September 2019
https://doi.org/10.1111/geoj.12328
Citations: 7

Abstract

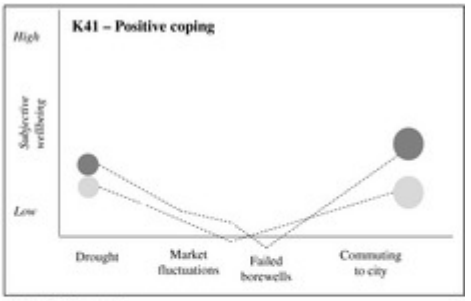
Migration is a key livelihood strategy to diversify incomes, reduce risks associated with rainfed agriculture and the effects of climate change, and meet personal aspirations. Drawing on life history interviews with migrant and non-migrant families, we explore the role of migration and commuting in addressing livelihood vulnerability along a rural–urban continuum in Karnataka, India. We find that labelling migration as an adaptation strategy or not does not necessarily capture the breadth of experiences and implications for livelihoods that migrants and their families face. At an intra-household level, migration and commuting can alleviate vulnerability for some family members while exacerbating vulnerability of others. At a larger scale, migration that is adaptive at a household scale can be maladaptive at a system scale, where cities are unable to provide for or absorb migrants who often live in highly vulnerable conditions. Finally, on a temporal scale, migration and commuting affect livelihood trajectories and choices beyond the migrants alone, and understanding how these strategies affect household vulnerability over time is crucial for adaptation research. We also highlight the use of life histories as a methodological tool that complements current econometric approaches exploring migration and allows for in-depth and temporally sensitive inquiry into the drivers and consequences of migration.

Abstract

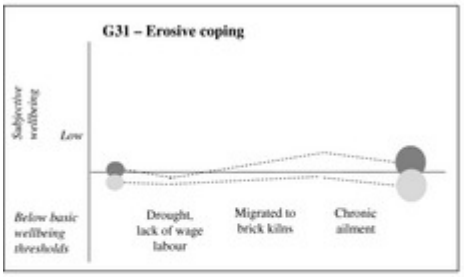
Drawing on life history interviews with migrant and non-migrant families, we explore the role of migration and commuting in addressing livelihood vulnerability along a rural-urban continuum in Karnataka, India. We find that labelling migration as an adaptation strategy or not does not necessarily capture the breadth of experiences and implications for livelihoods that migrants and their families face. Critiquing the "remittances euphoria", which equates remittances with improved adaptive capacity, our rich dataset demonstrates how when men and women move from rural to urban areas, they move in and out of vulnerability. Understanding this temporal nature of migrant vulnerability is critical for effective adaptation.



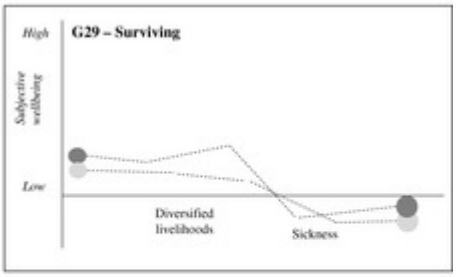
U3 – Possibly adaptive
Type: Permanent migrant from Gulbarga
What: Shopkeeper, election officer
Why: Lack of opportunity in village for educated people, 1972 drought made agriculture unviable
How: Educated, has political contacts, So what: Reduced exposure by relocation, improved material wellbeing, differences in subjective wellbeing between husband and wife.



K41 – Positive coping
Type: Commuting daily (Kolar to Bangalore)
What: Semi-permanent job as gardener, daughter working in city as domestic help
Why: Large debt (daughter's marriage, two failed borewells), heat stress made agriculture difficult
How: Through friend in village who was working as a gardener
So what: Increased material wellbeing after commuting, lower reliance on agriculture with lower drudgery for the man. More burden on wife.



G31 – Erosive coping
Type: Seasonal migrants (Gulbarga to Sholapur)
What: Brick kiln workers
Why: Landless, could not make ends meet working as wage labourers since agriculture is failing
How: Father went through contacts, family followed
So what: Income has improved after working in the kilns but health issues have started and relative wellbeing in community is the same



G29 – Surviving
Type: Semi-permanent migrant (Gulbarga to Bangalore)
What: Painter (earlier odd jobs in hotels, construction sites), works as agricultural labourer in January during harvest
Why: Small landholding made agriculture unviable, debt during sister's wedding, earlier loans
How: Step migration based on opportunity, word of mouth
So what: More income than in farming but occupational hazards have reduced quality of life. Sister working in the city

1 INTRODUCTION: THE PRECARITY OF AGRARIAN LIVELIHOODS AND THE ROLE OF MIGRATION

Migration results from a complex interplay of environmental, economic, social, and demographic factors. Disentangling the role of climate change as a driver of rural–urban migration is notoriously difficult (Gioli et al., 2016) and perhaps unnecessary (Adger et al., 2015; Black et al., 2011; Hummel, 2016; Singh et al., 2019). While climatic factors modify and exacerbate migration, the ways environmental drivers interact with existing social vulnerability remain poorly understood (Gioli et al., 2016).

In rapidly growing countries such as India, development trajectories are often "incomplete, lopsided and tortuous" (Roy, 2016, p. 1), and marked by widespread internal migration, changing aspirations, and unplanned urbanisation (Deshingkar & Akter, 2009; Thachil, 2017). Amidst growing evidence of how climate change impacts those dependent on natural resource-based agrarian livelihoods, studies in India are now testing linkages between increasing climate variability and migration (Upadhyay et al., 2015; Vishwanathan & Kumar, 2015). They find that drought frequency drives inter-state migration (Dallman & Millock, 2017), and temperature and rainfall fluctuations significantly motivate temporary migration (Viswanathan & Kumar, 2015). However, climate change affects migration decisions after being filtered through the local socio-economic context (Dallman & Millock, 2017; Patel & Giri, 2019) and acts as an "additional driver for already existing migration behaviour, amplifying and diminishing some (but not all) push and pull factors" (Upadhyay et al., 2015, p. 402).

There also remain gaps in understanding how migration affects well-being at source and destination (Chandrasekhar & Sharma, 2015; Deshingkar, 2004; Gemmene & Blocher, 2017; Schwan & Yu 2018), especially at an intra-household level (Bettini et al., 2017; Rao et al., 2020). Further, there are empirical and conceptual gaps around whether migration is an adaptation strategy (an adjustment to actual or expected climate and its effects), or indicates a failure to adapt (Ober & Sakdapolrak, 2017; Upadhyay et al., 2015). The IPCC's Fifth Assessment Report gives conflicting views on this, with some chapters labelling it a negative strategy and others calling it adaptive (Ober, 2014).

The first aim of this paper is to contribute to the migration-adaptation debate and demonstrate how binaries of migration as adaptation or a failure to adapt do not capture the precarity of livelihoods and dynamic vulnerabilities that stretch across rural and urban areas. We use an expanded well-being lens (which includes material, subjective, and relational well-being; Cohen, 2005), and conceptualise effective adaptation as strategies/processes that reduce vulnerability and enhance household and intra-household well-being.[1] By doing so, we provide empirical evidence on the factors shaping migration decisions, the place of climatic factors in these decisions, and the implications of migrating on household and intra-household well-being.

Methodologically, climate change research often takes an indicator-based, typically static approach to examining vulnerability[2] without capturing temporal aspects of livelihood trajectories (Ford et al., 2018; Singh et al., 2019). Migration studies are particularly populated by survey-based inquiries on drivers and impacts and "tend to miss or underplay the importance of social, cultural, historical and political factors" (Deshingkar, 2004, p. 2). In India, the overreliance on census data has been criticised for its monocausal reporting of reasons for migration (Mazumdar et al., 2013) and poor coverage of female migrants (Bhagat, 2017). Thus, the second contribution of this paper is to offer in-depth life histories (LHs) as a methodological approach to explore livelihood trajectories and understand temporal vulnerability within rural

areas and along the rural–urban continuum. This approach highlights how households negotiate socio-economic, environmental, and institutional dynamics with a range of strategies, and complements current survey-based migration studies in India.

2 MIGRATION AS ADAPTATION: EXAMINING THE EVIDENCE

2.1 Is migration adaptation?

Migration plays a critical role in livelihood security and in meeting adaptation goals (Adger et al., 2014; International Organization for Migration [IOM], 2015). The broader concept of risk management is helpful in examining the relationship between migration and adaptation. Risk management denotes "plans, actions, strategies or policies to reduce the likelihood and/or consequences of risks or to respond to consequences" (IPCC, 2018, p. 557), and encompasses short-term coping and longer-term adaptation (Singh et al., 2016).

The thesis of migration as adaptation (Black et al., 2011; Warner & Afifi, 2014) envisages mobility as "an array of (often interwoven) reactive and proactive strategies and behaviours" (Bettini & Gioli, 2016, p. 179) that reduces vulnerability, recognises the economic agency of migrants, and builds resilience through investing remittances. Conversely, the "migration as a failure to adapt" thesis argues that those unable to adapt to changing environmental conditions migrate (Upadhyay & Mohan, 2014). Our review of studies on links between migration and adaptation has uncovered a growing and often contradictory array of empirical evidence (Table 1).

Table 1. Review of literature on where migration fits on the continuum of risk management strategies, conceptualised as moving from erosive coping at one end to adaptation at the other.

Place on continuum	Implications of migration

Place on continuum	Implications of migration
(erosive)	(de Sherbinin et al., 2008), reduction in labour force in source areas (Rademacher-Schulz et al., 2014) Exacerbates existing inter-household inequality and vulnerability to disasters (Le De et al., 2015; Singh 2019) Synchronisation of agricultural and migration cycles can constrain local and regional food security. Rainy season migration can entail poor harvests, food insecurity, and increasing vulnerability; and weaken or lead to abandonment of local subsistence production (Rademacher-Schulz et al., 2014)
Positive coping (as a means of	Migrating during intense droughts enables subsistence for those remaining; during wetter times, it enables families to accumulate resources and diversify incomes (Afifi et al., 2016; Deshingkar & Start, 2003)

There is substantial evidence on how migration helps individuals and families diversify livelihoods and spread risk by moving out of climate-sensitive sectors such as agriculture and supplementing incomes through remittances (Bardsley & Hugo, 2010; IOM, 2015; Warner & Afifi, 2014). However, the option to migrate is often available only to those who can incur the significant economic and psycho-social costs that moving demands (De Haan, 2002; Kothari, 2002). Migration can also have negative impacts: migrants often enter unsafe, precarious livelihoods in urban areas, tend to live in risk-prone locations, and are often disempowered because of shifts in the influence of their social networks in cities, and loss of existing networks of kinship and care (Bettini & Gioli, 2016; Bhagat, 2017; Michael et al., 2018; Patil & Giri, 2019; Wrathall & Suckall, 2016). Further, moving can leave additional work burdens on those left behind, predominantly women and older people (Chindarkar, 2012; Desai & Banerji, 2008), and leave residual communities in rural areas with compromised capacity (Robson & Nayak, 2010; Warner & Afifi, 2014; Singh 2019).

In their reading of the "migration as adaptation" thesis, Bettini and Gioli (2016) criticise it for not adequately engaging with "structural inequalities that (re)produce socio-ecological vulnerabilities, impeding the mobility of some while forcing others into displacement." Others argue that migration signifies economic agency where remittances potentially build household adaptive capacity (Warner & Afifi, 2014), and that voluntary migration can reduce vulnerability (Black et al., 2011). Overall, this "swinging from optimistic to pessimistic perspectives on the capability of migration to make a difference for development" (Bettini & Gioli, 2016, p. 175) obfuscates its implications for reducing vulnerability and contributing to climate change adaptation (Gemmene and Blocher, 2017).

2.2 Migration through a livelihoods approach

From a livelihoods perspective, migration is "one of a set of strategies that households and communities use to diversify and support well-being" (De Haan, 2002, p. 4), manage risks and buffer incomes (Black et al., 2011; Carte et al., 2019; Deshingkar, 2010; Tacoli, 2009), and realise personal aspirations (de Haas, 2005; Punch & Sugden, 2013). This recognises the multiple contextual drivers of migration that traverse micro- (individual and household), meso- (socio-economic features of source and destination areas), and macro- (national and international policy landscape) scales (Adger et al., 2002). However, livelihoods approaches have often been criticised for treating households as homogenous units, using only remittances as a proxy for migration outcomes, and inadequately engaging with power and gender differentials (de Haas, 2010; Bettini & Gioli, 2016).

While climatic risks are increasingly being identified as significant drivers of migration, they are mediated by socio-economic factors, personal aspirations, and normative contexts (Black et al., 2011; Chapagain & Gentle, 2015; Hummel, 2016; Punch & Sugden, 2013; Rademacher-Schulz et al., 2014; Suckall et al., 2017). Keeping this in mind, we situate migration as one in a suite of livelihood strategies, recognising that migration decisions are mediated by environmental constraints and changes in livelihood opportunities, agency, and capacity to undertake *in situ* responses (Black et al., 2011; Chapagain & Gentle, 2015; Tacoli, 2009; Wrathall & Suckall, 2016). This also shows that vulnerable populations are heterogeneous, with differential access to resources and information, and varying agency (and consequently, varying capacities).

Few studies explicitly discuss well-being implications of differential climate impacts on communities and individuals or examine migration decisions and adaptation responses vis-à-vis changing well-being (notable exceptions are Chen et al., 2019; Mitra, 2010; Nowok et al., 2013). Some research has explored the compounding effects of climate change on the well-being of groups in already precarious and inequitable contexts (e.g., Sikder & Ballis, 2013). Viewing migration through the lens of livelihood vulnerability and well-being allows us to (1) explore the *interactions* of multiple drivers of migration; (2) examine how local livelihood choices are embedded in the larger socio-economic and politico-institutional context *across spatial scales*; and (3) follow household trajectories to understand livelihood choices and outcomes *across temporal scales*.

2.3 Migration and environmental change in India

Between 2001 and 2011, 8.1 million farmers in India have left agriculture (Census of India, 2011) due to an interplay of increasing climate variability, environmental change, rural debt, and policy shifts (Krishna et al., 2014; Mosse et al., 2002). Unfortunately, when farmers move, they do not necessarily move out of poverty (Bhagat, 2017). Often unskilled, migrants tend to inhabit spaces where resource access, identity, and power are highly contested and rights are negotiated based on one's social group and networks (Bhagat, 2017). Once in cities, upward

mobility is not guaranteed: a study of 14 slums in Bangalore found that the extent to which slum dwellers advance economically is small (Krishna et al., 2014). Thus, while rural–urban linkages can reduce poverty, generate employment, and encourage economic growth, the extent to which migration alleviates vulnerability and improves well-being is not clear (Chandrasekhar & Sharma, 2015).

Migration is also socially differentiated. Large landholders awore better able to manage climate-induced stresses while marginal farmers and landless labourers often move in response to or anticipation of climate-related stresses (Kavi Kumar & Vishwanathan, 2013; Singh et al., 2018). In Andhra Pradesh, Scheduled Tribes engage in circular migration, but fewer skills and poor social networks at the destination dissuade permanent migration (Deshingkar & Akter, 2009).

While there is increasing empirical evidence of environmental migration across India (Jha et al., 2018; Mitra, 2018; Viswanathan & Kumar, 2015), its focus has been on ascertaining causation (whether climate change drives migration), with lesser emphasis on the implications of migration for vulnerability and adaptation.

3 METHODOLOGY

3.1 The case study locations in Karnataka

To examine the outcomes of migration for vulnerability and adaptation, we use the illustrative case of a rural–urban continuum in Karnataka, a largely semi-arid state in South India. Karnataka is characterised by lopsided development, with its state-wide growth rate of 9.6% largely driven by the service sector and concentrated in large urban agglomerations such as Bangalore (the state's capital). In contrast, agriculture and allied activities, which support 55% of Karnataka's population (National Sample Survey Office, 2014), have registered a negative growth rate of –4.8% in 2018–2019 (Government of Karnataka [GoK], 2019). Currently, agriculture is facing pressures from land degradation, water scarcity, small landholdings (70% landholdings are <1 ha), low and stagnant yields, and frequent price fluctuations (Government of Karnataka [GoK], 2010). Successive Human Development Reports of Karnataka have highlighted severe socio-economic disparity within the state (GoK, 2019): South Karnataka has 1.3 times more per capita income than that of north Karnataka, and inter-district disparity has been increasing significantly over time.

Within Karnataka, 86% of migrants travel within the state, of whom 20% go to a district other than their own. Bangalore city's population has doubled in the first decade of the 21st century, and 30% of this population comprised migrants (Census of India, 2011). The influx of migrants has led to a third of Bangalore's population living in informal settlements, marked by unsafe conditions and precarious livelihoods (Michael et al., 2018).

In this context, we examine migration into Bangalore city (Figure 1). Based on scoping visits, secondary data, and key informant interviews with local researchers and government officials, we chose Kolar and Gulbarga districts (Figure 1) to understand the experiences of Bangalore's migrants. Kolar, in south Karnataka, is a prominent source of inter- and intra-state migration owing to its position at the cusp of three south Indian states. Water scarce and largely drought prone, Gulbarga is one of the largest districts in north Karnataka, and has been a site of historical out-migration (Iyer, 2017).

Livelihood vulnerability in both districts is shaped by environmental change, increasing climate variability, and local development trajectories (Singh et al., 2018). After Karnataka was reorganised in 1956, Kolar benefited from being integrated with the well-endowed and climatically favourable *Dakhshina* (south) Karnataka and Mysore, while Gulbarga went to the drought-prone northern parts of Hyderabad–Karnataka, which remained economically "backward" (GoK, 2010). We locate present-day vulnerability in Kolar and Gulbarga as a point on this regionally differentiated development pathway.

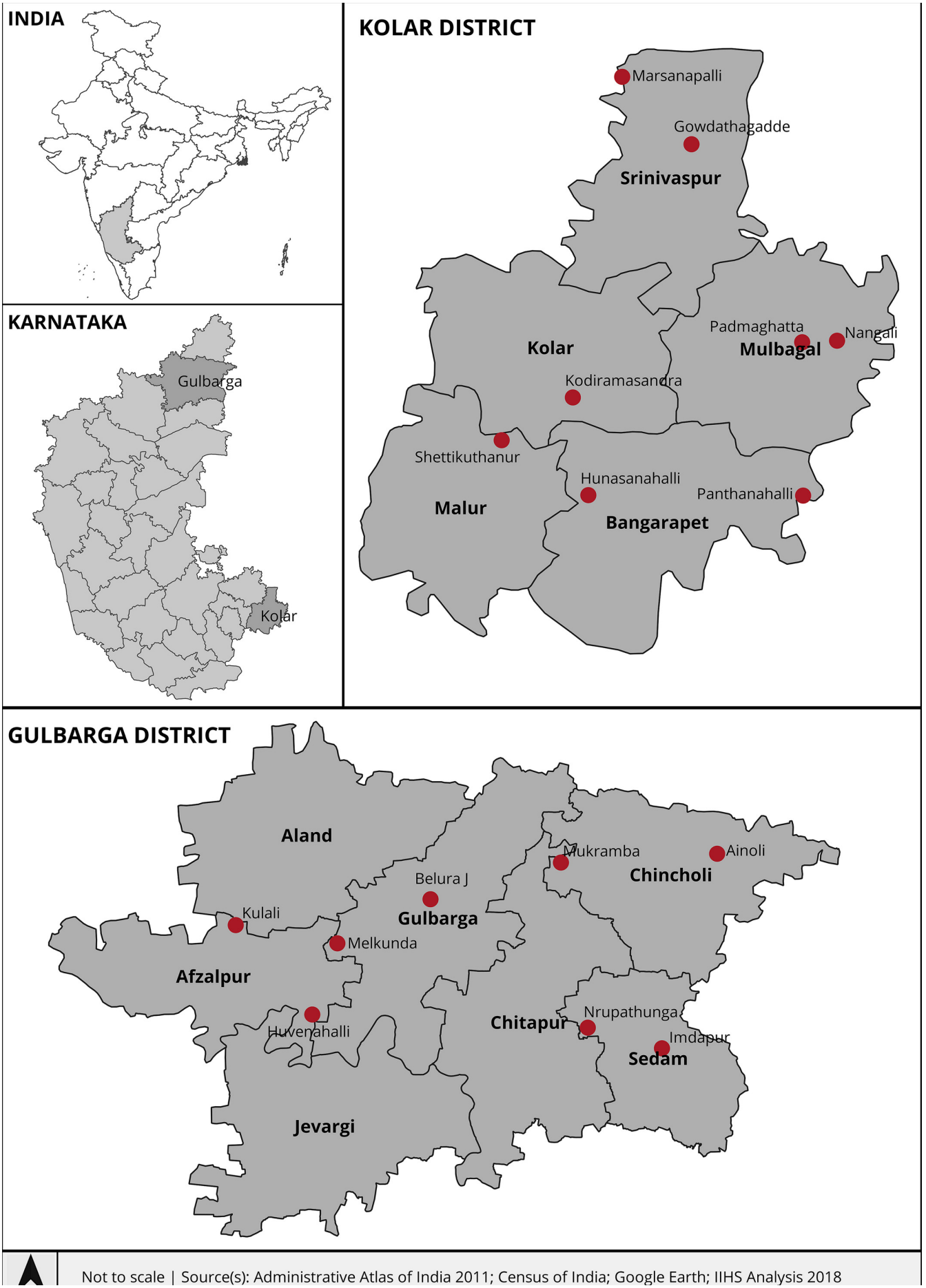

INDIA
KARNATAKA
Gulbarga
Kolar
KOLAR DISTRICT
Marsanapalli
Gowdathagadde
Srinivaspur
Padmaghatta
Nangali
Kolar
Mulbagal
Kodiramasandra
Shettikuthanur
Hunasanahalli
Panthanahalli
Malur
Bangarapet
GULBARGA DISTRICT
Aland
Mukramba
Ainoli
Chincholi
Belura J
Kulali
Gulbarga
Melkunda
Afzalpur
Nrupathunga
Chitapur
Huvenahalli
Imdapur
Sedam
Jevargi
Not to scale | Source(s): Administrative Atlas of India 2011; Census of India; Google Earth; IIHS Analysis 2018

Figure 1

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Map of Karnataka highlighting the two districts, Kolar and Gulbarga chosen for the study. [Colour figure can be viewed at wileyonlinelibrary.com]

3.2 Research design and sampling

We collected data across seventeen villages in Gulbarga and Kolar (rural sites) and three informal settlements in Bangalore city (urban sites). Data were collected through a semi-structured household survey (capturing demographic details, household assets, risks, and responses, n = 825),[3] gender-differentiated focus group discussions (FGDs; using participatory timeline exercises capturing risk perceptions and response strategies; n = 18 in Kolar, n = 8 in Gulbarga, n = 3 in Bangalore),[4] and in-depth life histories (LHs) (focusing on migration decisions and perceived well-being; n = 16). Our approach was open ended and involved over a year of fieldwork and three years of engagement through regular visits across seasons.

In this paper, we primarily use a dataset of 16 LH interviews (see Supporting Information A) supplemented by historical timelines developed through the FGDs, and migration trends from the household survey. Households for LHs were chosen purposively to capture multiple socio-economic conditions and migration patterns. This relatively small sample size reflects our intentions: not to draw statistical conclusions about migration in India that are generalisable to all rural households in semi-arid regions but to offer grounded insights into the "processes of livelihood change, particularly relationships between people" (Bagchi et al., 1998, p. 466).

The LH approach, while common in anthropology and human geography, has not been widely applied to climate change adaptation studies (notable exceptions include Ayeb-Karlsson et al., 2016; Singh et al., 2019). Our choice of the LH approach is guided by three "value additions" they offer: LHs (1) capture change over time and provide a dynamic understanding of risk perceptions, response strategies, and vulnerability; (2) go beyond dominant ways of measuring migration outcomes (through remittances, from survey-based instruments); and (3) help unpack intra-household dynamics and how gender mediates well-being and agency, which are omitted when treating households as homogenous units or simply as male versus female headed (Singh, 2018; Singh et al., 2019). LHs have drawbacks, such as needing to analyse individual stories against wider socio-political and environmental dynamics, requiring significant time and skill to collect and analyse data, and veering towards "self-justifying narratives" (Singh et al., 2019, p. 17) that may be very individual specific and subjective. We overcome some of these tensions by triangulating our findings, collecting data at various scales (district, community, household, and intra-household) to embed the findings in broader

dynamics, and following good practice from ethnographic research traditions (e.g., producing thick descriptions, undertaking iterative qualitative analysis). While the LH approach is not new to migration research (e.g., Locke & Lloyd-Sherlock, 2011; Rogaly & Coppard, 2003; Shucksmith & Brown, 2016), these three value additions make it suitable for answering our research questions around temporal vulnerability, household livelihood dynamics, and migration outcomes for adaptation.

The LH interviews were conducted with several adult members of a household to gain insights into "livelihoods and well-being (that) are increasingly conceptualised as partly the outcome of negotiations and bargaining between individuals with unequal power within households" (Bagchi et al., 1998, p. 457). The interviews were open ended and focused on changes in peoples' lives and livelihoods over 30 years, thus uncovering changing relations within and beyond the household, and the impacts of larger institutional trajectories on livelihood decisions.

The household survey data were analysed using summary statistics linking demographic information, asset holdings (such as housing, landholding, access to water), and migration drivers and status. The LH data were transcribed and coded using qualitative data software (NVivo 11) with a set of descriptive codes based on emerging themes from the transcripts.[5]

4 FINDINGS AND DISCUSSION

We first report findings from the FGDs and survey data on the nature and drivers of migration in Kolar and Gulbarga (Section 4.1). Next, we use evidence from four LHs to discuss migration outcomes for well-being and adaptation (Section 4.2), and discuss the implications of broader agriculture and development policy for people's vulnerability (Section 4.3).

4.1 Examining the decision to move: who, when, why, and how?

Moving is a regular feature of rural livelihoods across Kolar and Gulbarga with 47% and 32% of the sampled households reporting migration (Singh et al., 2018). Since 2010, the nature of this migration has changed from *rural to rural* movement for agricultural labour towards *rural to urban* movement for non-agrarian jobs. Most tend to migrate to nearby towns and cities to work in casual jobs such as construction labourers, drivers, carpenters, painters, and cooks. Some migrate directly to large cities like Bangalore, Mumbai, and Hyderabad. Others move incrementally, first exploring options in nearby towns, later making their way into the larger cities.

The key drivers of migration were expectations of higher-paying livelihoods elsewhere (55% of households), driven partly by aspirations, the perceived lack of opportunity in rural areas, and growing disillusionment with farming as a livelihood (Singh, 2019). Unprofitable agriculture

(29%), debt (8%), and marriage (1%) were other reasons for moving. Migration was also significantly differentiated by landholding size and caste (Figure 2).

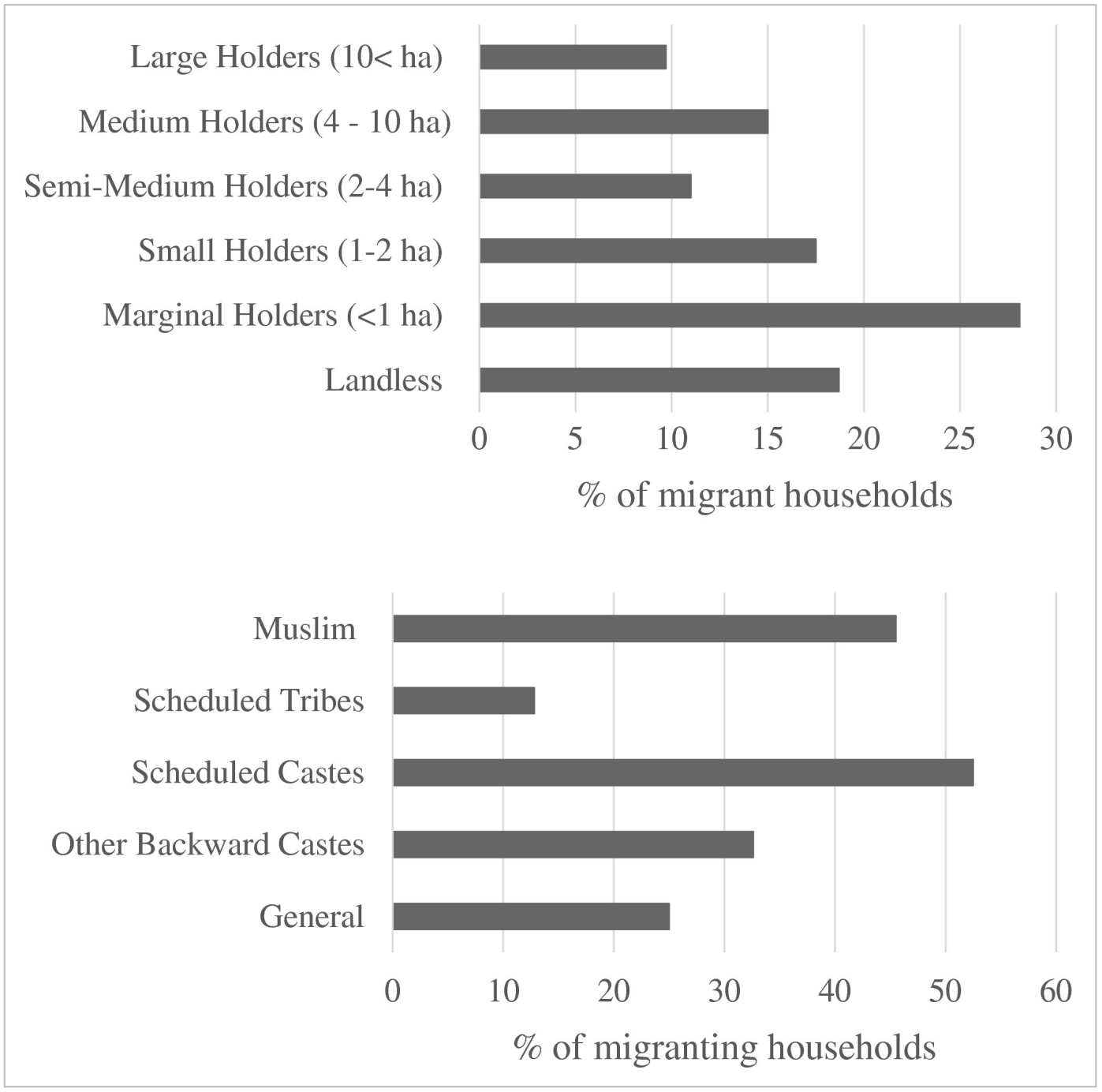

Figure 2

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Of the total sample (*n* = 825), 326 households reported migrating. Of these, migration was differentiated by landholding size and caste group.

Across Kolar, migration began in 2000, triggered by decreasing rainfall and intensified by the drought in 2010.[6] Of the households experiencing migration, 51% reported moving for less than three months in a year, 43% for 4–12 months, with only 2% moving permanently. Migrants are typically men who either commute daily to industrial belts around Bangalore (e.g., Narsapura Industrial Estate) or as wage labourers on construction sites in small towns nearby. Those with some education pick up contract-based jobs in Bangalore in housekeeping, security, and gardening, but these are usually accessible only through existing networks. Travelling more than 150 km back and forth to Bangalore is facilitated by regular and cheap train services (a monthly pass costs Rs.108 or $1.60). Nevertheless, remote villages reported less movement because of the high travel costs involved.

In keeping with social norms, women tend to travel with their families and undertake agricultural labour within or near their villages. Decreasing water availability has reduced the availability of on-farm jobs, making women travel farther, with some taking up jobs in garment factories nearby. Villagers reported that livelihood programmes such as the National Rural Employment Guarantee Scheme (NREGS) have not been able to stem migration because work beyond the village provides higher and more timely income.

In Gulbarga, migration reportedly increased in the early 2000s, concurrent with decreasing rainfall and growing connectivity to urban centres. Seasonal migration is predominant here: of the migrating households, 18% moved for less than three months a year, 60% for 4–12 months, and 5% moved permanently. Seventeen percent of households also identified as “return migrants,” that is, those who had lived for extended durations in urban areas but were now permanently living in their native village. Young men, who are typically landless or marginal landholders, migrate seasonally to cities such as Mumbai, Pune, Bangalore, and Hyderabad to work as informal wage labourers. Entire families (predominantly belonging to Scheduled Castes and landless or smallholder farmers) move seasonally from November to June to work in brick kilns in the neighbouring state of Maharashtra. Additionally, a few men reported commuting to Gulbarga every day to work as construction labourers. Women tend to provide agricultural labour within the village.

Increasingly, young men from Kolar and Gulbarga are moving out of agriculture and allied activities. This trend is characterised by a growing perception of agriculture being “unprofitable,” “laborious” (especially with increasing heat), and “unrewarding.” As one farmer in Kolar said, “we have prospered in the sense that we have brick houses but when it comes to livelihoods, things are the same. We have had to diversify just to keep at the same level” (K 29). Changing values and understandings of what “a good life” constitutes further shape livelihood choices and individual and collective aspirations.

Decisions to move, whether daily, seasonally, or permanently, are contingent on a combination of factors such as existing livelihoods; available assets; distance and connectivity; social networks to facilitate immersion in the city; job availability; educational prospects; and personal reasons such as marriage, family disputes, and individual aspirations (Singh, 2019; Singh et al., 2018). Critically, climate variability and environmental change are not new drivers; people in drought-prone Gulbarga have been moving seasonally since at least the 1970s, when the region witnessed one of its worst droughts. However, erratic rainfall and higher temperatures since the 2000s have increased overall livelihood vulnerability associated with agriculture (Singh et al., 2018).

Across both districts, respondents identified erratic rainfall and higher temperatures as reasons for reducing agricultural returns. Water availability and landholding size were also critical drivers of migration. In Kolar, those without borewells[7] typically moved and became construction labourers. In Gulbarga, seasonal migration to brick kilns had increased over time and "become pervasive amongst lower castes" (pers. comm. G10, NGO officer in Gulbarga) because of fragmentation of landholdings and decreasing employment from agricultural labour.

Migration occurs both in steps (a male member moves, followed by the family) or *in toto* (entire families migrate together in one move). Migration decisions were often decided by all in the family or by male members in a consultative fashion. In households with care giving responsibilities (e.g., for young children or old parents), one of several brothers (typically the eldest) stayed in the village, while younger brothers (who may be more educated) moved.

4.2 Outcomes of moving

We now present four LHs to examine the outcomes of migration for people's adaptive capacity and well-being. The four stories draw on male and female perspectives within the household and are illustrative of the range of livelihood trajectories and risk management strategies observed. While the life histories are detailed in Supporting Information B, here, the stories are presented in brief.

4.2.1 Four life histories

K41: Daily commuting and getting by

K41 is a 48-year-old smallholder farmer from Kolar who commutes daily to Bangalore city, where he works as a gardener. Recurrent drought and consequent losses in farming, consecutive failure of borewells for which he took large loans, market price fluctuations for new ventures he diversified into (e.g., sericulture), and expanding needs due to his daughters' dowries, all motivated K41's decision. The outcomes of commuting on K41's life have been mixed. While he is earning a steadier income, it has come at the costs of increased work for his

wife and his long absences from home. He commutes for eight hours every day, six days a week, a gruelling schedule he says he prefers to farming under the hot sun. He reported being satisfied with his current job because it provides a steady pay and accommodates personal requirements such as leave to get government food rations each month. He now has networks in the city and has even helped others in his village to get jobs as gardeners.

U3: Permanent migration and upward mobility

U3 is a 58-year-old man who permanently migrated from Gulbarga to Bangalore to move away from farming and improve his job prospects. He lives in a notified urban slum with his family of five. U3 slowly overcame issues of assimilating into Bangalore by making political contacts and becoming a local block officer in the Indian National Congress. Over time, U3 has built his own house, educated his four children, and considers himself more well off than his relatives who did not migrate. His wife opened a small shop outside their house, and while their income and living conditions have improved considerably (from living in leaking tarpaulin huts when they arrived to owning their own *pukka* house today), U3's wife spoke of difficulties in accessing water, concerns over her children's ability to compete with "city kids," and feelings of shame because of the stigma attached to being a "slum dweller."

G31: Seasonal migration as a coping strategy

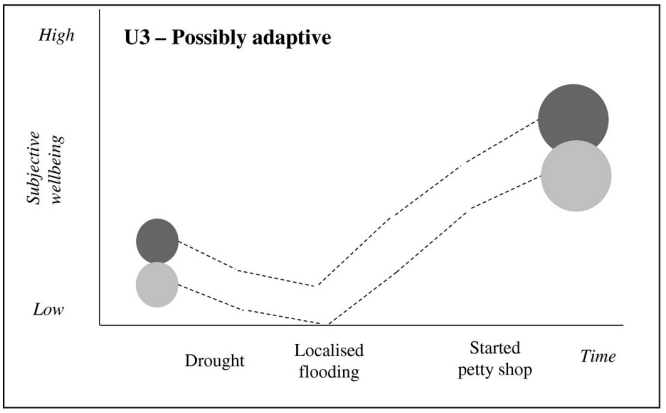
G31 is a 23-year-old unmarried woman from a family of eight, living in Gulbarga. Along with other family members, she migrates to Sholapur district (in Maharashtra state) to work at brick kilns. Over the past five years, regular drought-like conditions in her village have reduced employment opportunities for landless families like G31's. Her material well-being has only marginally improved – brick kiln work is extremely strenuous, with poor working conditions and payments that are erratic and weather-sensitive: "Sometimes during the monsoons, brickmaking comes to a complete halt. But in good years, we have even made twice the usual amount." While remittances have helped the family tide over lean periods, breaking out of temporary, poor working arrangements has been impossible.

G29: Semi-permanent migration and surviving through hustling

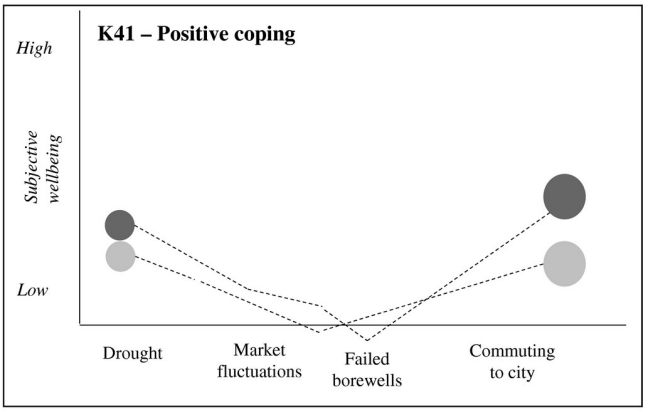
G29 is a 28-year-old man staying with his parents and three sisters in Gulbarga. They own one acre of land, which they rent out. His parents work as wage labourers, and his sisters work in the village crèche. G29 has taken up various informal, low-paying jobs (driver, cook, cleaner, painter) across three cities he has moved to. Recently, ill health forced him to return to his village, but further debts for his sister's wedding have made him migrate again. While working in Bangalore has increased his income, it has significantly affected his physical health. "There is no significant improvement in my life compared to that of my parents. I am unable to break this cycle of poverty that my parents also had to face."

4.2.2 Is migration adaptation? The "moving in and out of vulnerability" heuristic

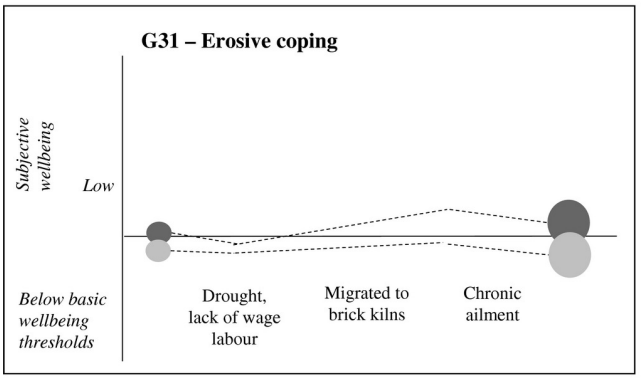
In Kolar and Gulbarga, migration was undertaken to manage risks associated with rural livelihoods and to meet social expectations and personal aspirations. It was often undertaken by indebted, landless, lower caste, and smallholder respondents to earn more (Section 4.2.1, life histories G31, G29) and when farming was financially unviable (K41). Migration outcomes were not a linear function of remittances leading to higher well-being, but tended to be intricately mediated by who was migrating, to where, and into what. A mix of assets, skills, social networks, and personal attributes (caste, language, education levels, aspirations) shaped migration outcomes. These outcomes of migration and their implications for household adaptive capacity and well-being of the four LHs (Section 4.2) are depicted in Figure 3.



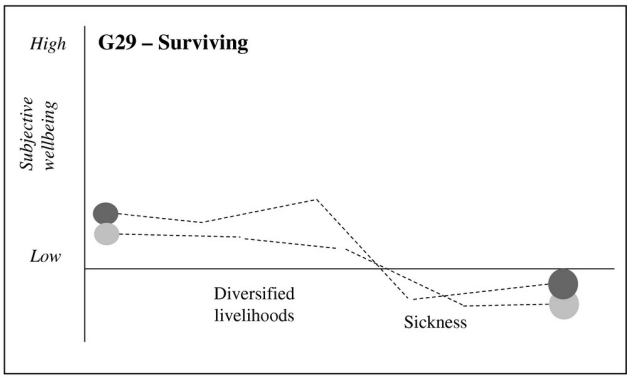
U3 – Possibly adaptive
Type: Permanent migrant from Gulbarga
What: Shopkeeper, election officer
Why: Lack of opportunity in village for educated people, 1972 drought made agriculture unviable
How: Educated, has political contacts, So what: Reduced exposure by relocation, improved material wellbeing, differences in subjective wellbeing between husband and wife.



K41 – Positive coping
Type: Commuting daily (Kolar to Bangalore)
What: Semi-permanent job as gardener, daughter working in city as domestic help
Why: Large debt (daughter's marriage, two failed borewells), heat stress made agriculture difficult
How: Through friend in village who was working as a gardener
So what: Increased material wellbeing after commuting, lower reliance on agriculture with lower drudgery for the man. More burden on wife.



G31 – Erosive coping
Type: Seasonal migrants (Gulbarga to Sholapur)
What: Brick kiln workers
Why: Landless, could not make ends meet working as wage labourers since agriculture is failing
How: Father went through contacts, family followed
So what: Income has improved after working in the kilns but health issues have started and relative wellbeing in community is the same



G29 – Surviving
Type: Semi-permanent migrant (Gulbarga to Bangalore)
What: Painter (earlier odd jobs in hotels, construction sites), works as agricultural labourer in January during harvest
Why: Small landholding made agriculture unviable, debt during sister's wedding, earlier loans
How: Step migration based on opportunity, word of mouth
So what: More income than in farming but occupational hazards have reduced quality of life. Sister working in the city

Figure 3

Open in figure viewer | PowerPoint

Four illustrative household trajectories. Bubble size denotes reported material wellbeing (based on income and assets). The x axis denotes time (from 1970, which was a significant drought in India, to present) and y axis shows reported subjective wellbeing (respondent narratives were coded as high, medium and low). Dark grey represents a male respondent and light grey a female respondent within the household.

Overall, migrants are doing better but rarely showed upward mobility

Those migrating reported improvements in material well-being but lower subjective well-being, with particular references to increased drudgery (K41), poor quality of life in the initial phases of moving (U3), and adverse health impacts (G31, G29). In brick kilns especially, outcomes could ripple across generations:

> “For people who find work in brick kilns, their children are either left behind when there are grandparents or they drop out of school when their parents migrate. Once they drop out, they will never go back to school. Considering the grim agricultural situation here, these kilns are sought after. A family of four can live on these earnings for the entire year. (G31)”

On the positive side, moving into non-farm sectors improved wages (K41, U3), developed new social networks (U3, G31), and improved chances of education for second-generation migrants (U3). In urban slums developed over a long time, accrual of social capital and bargaining power helped build adaptive capacity. For example, U3, who had lived for more than a decade in Bangalore, reported doing better than those who had not moved, suggesting improved relational well-being. However, the implications for onward upward mobility remain mixed, confirming previous research (e.g., Mitra, 2010).

Several migrants spoke of more family members migrating because of the growing unviability of agrarian livelihoods (K41), reduced communal ties (G29), and a struggle to meet aspirations (G29, G31). Thus, migration also entailed “psychic costs” (Byerlee, 1974), which included what we call “moving into vulnerabilities,” such as having to set up new social contacts (U3, G29), living in overcrowded and often illegal tenements (U3), and exhaustion due to long hours of commuting (K41).

Questioning the remittances euphoria

Proponents of the thesis of “migration as adaptation” highlight the critical role of remittances in building adaptive capacity (Upadhyay & Mohan, 2014). While remittances supplemented household income and helped repay existing loans (G29, K41), they did not necessarily increase adaptive capacities to deal with climatic risks, thereby questioning the “remittances euphoria” (Bettini et al., 2017). In some cases, in fact, moving out led to an individualisation of resources (e.g., K41’s decreasing reliance on common property resources such as village ponds and increasing dependency on individually owned borewells), increased exposure to risks (U3’s exposure to localised flooding during the initial years in Bangalore), and higher sensitivity to idiosyncratic shocks such as accidents and illness (G29). Such negative aspects of migration were countered when a migrant had moved for a long time and could accrue benefits through

improved social and human capitals, which led to improved well-being (U3). Across the LHs, remittances presented mixed effects, demonstrating how migration is more a coping strategy, "never leading to accumulation and only ensur[ing] survival" (Deshingkar & Farrington, 2009, p. 92). Given this, we are cautious of arguments that remittances present a potential for transformative adaptation (Warner & Afifi, 2014).

While the literature is replete with examples of migration rendering precarious the lives of those left behind (Bhagat, 2017; Desai & Banerji, 2008; Mosse et al., 2002), we also found people moved into new vulnerabilities in urban areas. These vulnerabilities are mediated by geography (regional differences between North and South Karnataka meant there was migration from the poorer "backward" north to the south, but these migrants often faced persecution as they were seen as outsiders); by caste (upper caste typically migrated for education, skilled jobs; lower castes for unskilled, informal wage labour); and by gender (women in Kolar seldom commute to Bangalore in keeping with gendered social norms). This "process of othering" (Rogaly et al., 2002, p. 107) is seldom discussed when equating remittances with adaptive capacity.

In some cases, moving does not necessarily allow people to move out of existing social structures and norms. In Bangalore, informal settlements were typically segregated based on religion or caste, similar to rural settlements. While caste ties leveraged to enter the city made them critical to navigating new terrains, they also ensured that "historic identities either remained intact or morphed into new forms of inequity and discrimination" (Bhagat, 2017, p. 36). In isolated cases, we found that moving had allowed people to break away from socio-cultural norms and expectations, as illustrated by G39 (*Devadasi* family working in brick kilns) and U3 (who had built caste networks to become a local political activist for others in his community).

Gendered decision-making and well-being implications

Decisions and responses involving migration within and beyond the home were highly gendered. These were a function of perceived and practised gender identities and norms. Women's roles in intra-household decision-making processes, including decisions around migration, were shaped by patriarchal norms. Although traditional gender roles shift, especially due to larger changes such as moving to the city (e.g., U3), these shifts happen within normative boundaries. For example, for U3, migration shifted intra-household gender roles, when his wife started earning many years after migrating. Although these shifts can empower women (U3's wife; U5[8]), the limited voice and agency of women around decisions to switch roles or take on non-traditional chores to supplement income questions the nature of this empowerment. Nevertheless, such incremental shifts did contribute to altering gender norms and the landscape of household income, decisions, and opportunities.

We also found evidence of unplanned and opportunistic processes increasing women's agency (e.g., U3's wife started a home-based tailoring business, and this allowed her to save for a petty shop and finance her children's extracurricular activities such as gymnastics). These investments accrue over time and translate into capacities that may directly or indirectly help respond to crisis, albeit rather inconspicuously. Thus, although there are gendered trade-offs that have uneven consequences within the household, the reproduction of vulnerabilities within households due to moving can be minimised by strengthening social security programmes and community-level support interventions.

4.3 The wider political economy of agriculture and structural drivers of vulnerability

In semi-arid rural India, livelihood vulnerability is embedded in "structural matrices of vulnerability" (Murray, 2001, p. 4) that play out along historical lines of socio-political marginalisation. Thus, reflecting on structural deficits that constrain agriculture as a viable livelihood is key to understanding the drivers of migration. Our findings build on previous calls for moving away from "maximalist narratives of migration," which try to disaggregate "environmental drivers from other root causes of mobility in order to produce estimates of potential 'environmental migrants'" (Bettini & Gioli, 2016, p. 177). In fact, we find that structural conditions mediate migration choices and migrant experiences deeply (e.g., caste-based networks facilitating entry into the city and certain jobs; Michael et al., 2018), and that tracking the causal chains of vulnerability (Murray, 2001) is essential when examining household livelihood trajectories, their response pathways, and the ebbs and flows of well-being.

Given this understanding that structural deficits create conditions for out-migration, there is a need to challenge discourses that put the onus of adaptation on migrants. In the LHs, resort to migration was often due to falling returns from agriculture against the backdrop of unchecked natural resource degradation and inadequate policy support for agriculture and allied sectors. Even when migrants improved incomes through remittances, the money was often used to repay debts and invest in more borewells, an ecologically and financially unsustainable strategy. Thus, migration drivers and outcomes did not follow conventional linear arguments of remittances transforming "the vulnerable … into adapted, resilience subjects" (Bettini et al., 2017, p. 184). In fact, we argue that such conceptualisations of migration seem to absolve the state from putting in place structures and institutions that curb the root causes of migration, and providing adequate social safety nets for those who do migrate. In practice, this would mean providing portable state benefits, childcare facilities in informal workspaces such as construction sites and brick kilns, and moving away from *ad hoc* skill-building initiatives to targeted skilling programmes that are suited to changing aspirations and differential skill sets.

Instead of a "narrow focus on the entrepreneurial abilities of the migrant, who is expected to shoulder the burden of development alone" (Bettini et al., 2017, p. 176), targeted schemes to provide viable livelihood opportunities in rural areas would be more effective (Singh & Rahman, 2018). Across our data, we found that migration was an option people typically did not choose: there were examples of skilled migrants musing about retiring to their villages (G13) and permanent migrants whose identity was closely tied to their native places (e.g., U3, who after 30 years of living in Bangalore, still identified as being from Gulbarga). Thus, while it is important to recognise migrants' tenacity, this resilience is more symptomatic of their resourcefulness despite unfavourable conditions rather than factors enabling their success.

Critically, seasonal and temporary migrants (e.g., G29) fell between the cracks of rural and urban policy; typically, they tended to enter precarious livelihoods, had poor social capital in their destination, had low access to health services, and did not earn enough to accrue benefits that longer-term migrants did. Thus, seasonal migrants were most vulnerable, falling in a grey area where the state is conspicuous by its absence. Possible ways of addressing this are by strengthening in situ adaptive capacity in rural areas by strengthening institutions to protect and rejuvenate natural resources, thus avoiding pushing out those people with lower "environmental capital" (Hunter et al., 2014).

5 CONCLUSION

Is migration a climate change adaptation strategy or not? How does moving affect household vulnerability and adaptive capacity and how is this differentiated within households? In this paper, we attempt to answer these questions using a case study from a rural–urban continuum in Karnataka, South India.

People from rural Karnataka have always moved to other rural or urban areas in search of employment and have done this more in periods of scarcity and climate variability (e.g., the 1972 drought). However, recent mobility is driven by a complex set of factors – from poor farm returns and a lack of livelihood opportunities for educated youth in rural areas, to increasing climatic variability and changing aspirations. The life histories presented in this paper demonstrate the breadth of drivers that motivate people to move – either regularly or permanently – and the multiple impacts these decisions have on people's well-being. This empirical evidence adds to ongoing debates of whether migration can be seen as an adaptation, or as a failure to adapt (Gemmene and Blocher, 2017; Ober, 2014), and shows that for individuals within families, such dualistic framings are too simplistic to capture the differential impacts migration has. We also contribute to gaps in literature on the gendered nature of climate-induced migration (as noted by Bettini & Gioli, 2016) and demonstrate how migration decisions affect men and women differently, as well as shaping intra-household dynamics (through differential well-being, shifting work burdens, entry into unsafe and

uncertain working conditions, and increased precarity for those who move and those who are left behind). Finally, we demonstrate how moving across the rural–urban continuum does not always reduce vulnerability; households and individuals tend to move in and out of vulnerability based on the livelihoods they enter, the intra-household dynamics present, and the larger social-ecological and politico-institutional settings they operate within. We argue that for adaptation interventions to be effective, understanding this temporal aspect of vulnerability is critical.

Effective methods to estimate the number of internal migrants and model the complex interplay of environmental and socio-economic drivers are still underdeveloped (McLeman, 2013). While our findings cannot be generalised to migrants as a whole, we demonstrate how, even in data-scarce contexts, in-depth life histories can provide insights on migration decision-making and whether these decisions improve peoples' well-being and adaptive capacities or not.

Binaries defining migration either as a failure to adapt or as a successful adaptation strategy do not accurately depict the pathways of marginalisation, inequity, and aspirational shifts that shape migration outcomes. This corroborates emerging research that interrogates the role of migration in adaptation processes (Bettini & Gioli, 2016; Radel et al., 2018) but goes beyond by unpacking migration decisions at an intra-household level. In addition, we argue that migration outcomes are highly differentiated across and within households, and often, causal patterns of vulnerability in rural areas are replicated in urban settlements. This reinforces class and caste inequities, continues exposure to environmental risks, and consolidates drivers of lower adaptive capacity such as poor bargaining power and limited asset ownership. In this context, we question whether conceptualising migration as adaptation is too myopic and fails to recognise the deep-seated social and ecological compulsions that drive these decisions.

ACKNOWLEDGMENTS

The information, practices and views in this article are those of the authors and do not necessarily reflect the opinion of the Royal Geographical Society (with IBG). This work was supported by the Adaptation at Scale in Semi-Arid Regions (ASSAR), which is a consortium under the CARIAA programme of the International Development Research Centre (IDRC) and the UK Department for International Development (DFID). The views expressed in this work are those of the creators and do not necessarily represent those of DfID and IDRC or its Board of Governors. The authors acknowledge valuable feedback on an earlier version of this paper at the Royal Geographical Society International Conference in London, 2016. We greatly value inputs from Amir Bazaz, Aromar Revi, Andaleeb Rahman, Prathigna Poonacha, and Arjun Srinivas at different stages of this research. Thank you to Bhavana Halanaik, Harpreet Kaur, and

Shamala Kittane for help with data collection. Finally, we are indebted to all our respondents who allowed us to play a small role in their life stories.

ENDNOTES

- 1 Migration studies commonly use remittances as a proxy for increased adaptive capacity (Gemmene & Blocher, 2017; Bettini & Gioli, 2016). We argue that our focus on well-being captures non-monetary outcomes of migration, such as changes in intra-household work burdens, and thus goes beyond remittances alone.
- 2 For this paper, vulnerability is understood as susceptibility to harm," which is based on social, ecological, environmental, and institutional factors that put people and places at risk and which reduce the ability to respond to threats (Ford et al., 2018; IPCC, 2018).
- 3 For the household surveys, villages were chosen using a two-stage sampling strategy, informed by repeated scoping visits over six months and interviews with key informants. We purposively identified sub-districts within Kolar and Gulbarga, focusing on representing different livelihoods, and socio-demographic and agro-climatic characteristics. Within each sub-district, two villages were randomly chosen with the condition that the villages should have a population of more than 200 households, and have more than 20 ha of cultivated land. Within each village, households were randomly sampled based on a proportional representation basis to represent different caste and income groups, landholding sizes, and livelihood types (details in Singh et al., 2018).
- 4 In each village, male and female FGDs were conducted to understand village-level dynamics and livelihood shifts (detailed in Singh et al., 2016). In the urban areas, we undertook three FGDs to chart out the history of the settlement, reasons for migration, differential access to resources and institutions, and intra-settlement dynamics.
- 5 The four broad code families were (1) changes in livelihoods (including migration), ecosystem services, and socio-political factors, (2) drivers of vulnerability, (3) risk management strategies (e.g., coping, adapting) and decision-making, and (4) outcomes of responses (e.g., on well-being, adaptive capacity, aspirations). The codes were co-developed by the larger researcher team through several meetings in an iterative, inductive manner.
- 6 This section draws on the village-level FGDs. For details on the patterns of environmental, social, and political change in the study sites, refer to Singh et al. (2016) and Singh et al. (2018).
- 7 Borewell is the term commonly used in India for drilled access to groundwater (elsewhere often "borehole"); they are commonly 12–30 cm in diameter, can be up to 450 m deep, are mechanically drilled, pumped using electricity or diesel, and are lined with plastic pipes.
- 8 U5 is a Muslim lady in her late 50s, a migrant resident of an urban slum in Bangalore. Overnight, she had to take on the role of the financial head of a family of six after her husband's accident that left him handicapped and jobless.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Supporting Information

Filename	Description
geoj12328-sup-0001-AppendixS1-S2.docx Word document, 197.7 KB	**Supporting information S1.** Details of life histories of migrant and non-migrant households (HH). **Supporting information S2.** Details of four life histories discussed in the paper.

Please note: The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries (other than missing content) should be directed to the corresponding author for the article.

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