



Building resilience to climate change

MGNREGS and drought in Jharkhand

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The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is one of India's flagship social protection programmes. This paper is part of a series of briefings that analyse how MGNREGS builds the resilience of rural households to different climate shocks. The goal of the series is to identify options for Indian policymakers to integrate climate risk management into MGNREGS. It will also provide global policymakers with evidence on how to mainstream climate risk management into social protection programmes, or combine and layer social protection instruments with climate risk management instruments to address poverty in the context of climate change.

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Summary

Despite progress in reducing poverty across the globe, the rising challenge of climate change could reverse development gains, reinforce structural barriers to development and push people back into poverty. To create more lasting development solutions for the rural poor, policymakers need to address the multifaceted risks posed by social and economic exclusion and climate change.

Social protection and climate change instruments aim to support inclusive and climate-resilient development, respectively. The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is one of India's flagship social protection programmes and its beneficiaries are among the most climate-vulnerable people in India. But as well as helping poor households cope with poverty and marginalisation, such schemes can also help poor and vulnerable households build to the impacts of climate change (Agrawal *et al.* 2017).

This paper is one in a series of briefings that analyse how MGNREGS builds rural households' resilience to different climate shocks. In this paper we examine how MGNREGS is helping households in West Singhbhum District, Jharkhand build resilience to drought.

The goal of the series is to identify options for Indian policymakers to integrate climate risk management into MGNREGS. More broadly, our findings also provide evidence for global policymakers on how to mainstream climate risk management into social protection programmes, or converge and layer social protection and climate risk management instruments to address poverty in the context of climate change.

Analytical framework

Our analysis is based on a theory of change that identifies how MGNREGS interventions can lead to changes in five livelihood capitals, building household resilience to climate change so they can address complex risks and take advantage of new opportunities.

What are livelihood capitals?

Poverty is not just a lack of income. People rely on a combination of livelihood capitals to build sustainable livelihoods:

- **Natural capital:** value in natural resources to produce goods and services
- **Physical capital:** value from infrastructure that contributes to the production process
- **Human capital:** value from skills training, good health, knowledge and motivation.
- **Social capital:** value from social networks and institutions that help people improve their social status, maintain and develop human capital, and
- **Financial capital:** value from income sources, assets and consumption patterns.

What are resilience outcomes?

Resilience outcomes are the changes in a household's ability to respond to climate hazards as a result of changes in their livelihood capitals described above. Our analysis is based on three types of resilience:

- **Absorptive** resilience: a system's ability to maintain its original structure by absorbing infrequent and low-magnitude risks
- **Adaptive** resilience: a system's ability to improve its original structure to manage future risks and bounce back better when shocks occur, and
- **Transformative** resilience: a system's ability to fundamentally change its structure to move beyond vulnerability thresholds.

Main findings

Pathways to household resilience

MGNREGS can improve the capacity of households in West Singhbhum to absorb, adapt or transform in the face of increasing climate risk. We present our findings here in the format outlined in our theory of change, drawing on primary data from focus group discussions, key person interviews and a survey of 150 households.

A combination of MGNREGS instruments helps households build absorptive and adaptive resilience in West Singhbhum. Guaranteed wages are key in providing households with income to manage drought, while institutional strengthening has significantly increased MGNREGS participation – and hence the availability of wage labour – in the district. MGNREGS investment in water conservation infrastructure has improved water availability for irrigation, increased agricultural production and ultimately provided income for households to meet their consumption needs or invest in more durable livelihoods.

Livelihood capital contribution to resilience outcomes

Changes in a **combination of livelihood capitals** are important for delivering absorptive and adaptive resilience in West Singhbhum. MGNREGS investment in assets has increased physical capital (*dobas* or farm ponds, dug wells and irrigation pumps) has helped improve natural capital (water availability, crop diversity and agricultural production) and boosted financial capital through increased income earned from agriculture. Institutional strengthening has led to increases in social capital by using women's self-help groups to raise awareness on MGNREGS in West Singhbhum. The increased access to guaranteed wages has also helped boost financial capital. In some cases, access to financial capital has helped households maintain wellbeing, leading to absorptive resilience. In others, households have improved their wellbeing, leading to adaptive resilience. We found that improvements in physical and social capital were more likely to lead to adaptive resilience than other outcomes.

Resilience outcomes

Nearly 25 per cent of our survey households have built **absorptive resilience** through a combination of MGNREGS instruments – guaranteed wages, institutional strengthening to increase participation in MGNREGS wage labour and investment in water

conservation infrastructure. The financial capital from guaranteed wages and increased farm production provides a safety net for some households to help them absorb drought. For these households, MGNREGS assets have not provided enough water to boost farm production to a level that income and overall household wellbeing has increased. Other households have not benefited from the construction of *dobas* on their land, leaving many exposed to drought and reliant on MGNREGS wages to support consumption when climate shocks occur.

Twelve per cent of our survey households have built **adaptive resilience**, improving their wellbeing through MGNREGS despite the impact of drought. Like absorptive resilience, a combination of guaranteed wages, institutional strengthening and MGNREGS infrastructure improve multiple livelihood capitals, but in this case leading to an overall improvement in wellbeing despite the impact of drought.

Only two per cent of our survey households have built **transformative resilience**, so we cannot draw any definitive conclusions from this.

Half of our survey households reported a **decline in resilience** during the 2015/16 drought, despite participating in MGNREGS. Strengthening institutions to increase the coverage of guaranteed wages and delivering better planned, larger water conservation infrastructure to more households would help improve resilience outcomes for these households.

Local economy and ecosystem services

MGNREGS' impact extends beyond the household into the local economy, providing additional benefits for some respondents: around 30 per cent reported a change in skills and a higher local wage rate and 10 per cent reported more local enterprises.

MGNREGS also helps improve ecosystem services, which in turn drive changes in the local economy. By increasing the availability of water and agricultural land and diversifying crops, MGNREGS has helped households maintain or improve their wellbeing despite increasingly frequent droughts.

But more than half of our sample households reported no change to ecosystem services and a small number reported a decline. This suggests that MGNREGS is either not extending improved water conservation practices to a large number of our sample households or that these households can only maintain but not improve their agricultural livelihoods in light of more frequent and severe droughts.

POLICY RECOMMENDATIONS

1. **Delivering a combination of MGNREGS interventions** will build and sustain the resilience of households over time.
2. **Integrating climate risk management into MGNREGS** through climate-resilient wages, infrastructure, institutions and skills to ensure the scheme can help households build absorptive, adaptive and transformative resilience. Policymakers in Jharkhand should focus on improving climate-resilient wages that pay out before the impact of drought severely impacts households and on expanding the coverage of water conservation assets to more households, especially those with larger water storage capacity that also adhere to watershed management design principles.
3. **Converging MGNREGS with other initiatives and programmes that support climate risk management** can help programme implementers spread the financial and delivery costs of resilience activities and build more resilient households and communities.
4. **Ensuring that MGNREGS interventions at household level promote spillover benefits to the local economy and improved ecosystems services** will help create more resilient communities.

Introduction

1

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is one of India's flagship social protection programmes. Under the scheme, all rural households are entitled to 100 days' guaranteed wage employment as unskilled labourers building different types of rural infrastructure. More than a decade has passed since MGNREGS was launched. Since its inception, the scheme's objectives have expanded to include improving the durability and sustainability of rural infrastructure, strengthening rural institutions and skilling the rural labour force.

During this same period, climate change has risen up the global development agenda as the evidence base has made it increasingly clear that the rural poor in developing countries will be most adversely affected by climate change (IPCC 2014; Sen 1999). Although there have been significant achievements in reducing poverty across the globe, the increased frequency and intensity of extreme weather events and long-term changes in weather patterns associated with climate change will exacerbate the shocks already faced by poor households in developing countries and reinforce the underlying drivers of poverty (IPCC 2014; Reddy *et al.* 2014; Hallegatte *et al.* 2016). When exposed to increasingly frequent and high-magnitude risks, social, economic and ecological systems will therefore need to absorb, adapt and transform to successfully deal with change.

Social protection programmes like MGNREGS are already helping households and communities cope with poverty and marginalisation. But they can also help households absorb the effects of climate risks, adapt to climate impacts and transform their ability to address escalating and future climate stresses (Agrawal *et al.* 2017). With high rates of poverty and livelihoods that are based predominantly on changing natural systems, MGNREGS beneficiaries are among the most climate-vulnerable people in India. But to date, there has been no systematic attempt to understand the scheme's contribution to building the capacity of rural Indian households to address climate change risks and impacts.

This paper is part of a series of four state briefings that, along with a meta-analysis of social protection and climate resilience in India, aim to fill this evidence gap. The goals of the series are to analyse how MGNREGS builds the resilience of vulnerable women and men to different climate shocks and identify options for Indian policymakers to integrate climate risk management into MGNREGS. More broadly, these briefings also aim to document options for a global policymaking audience on how to mainstream climate risk management into the provision of social protection, or combine and layer social protection instruments with climate risk management instruments to address poverty in the context of increasing climate risk.

The papers draw on field research into MGNREGS and specific climate-related shocks in different states: cyclones in Andhra Pradesh, drought in Jharkhand, flooding and drought in Odisha and winter drought in Sikkim. This paper documents how MGNREGS is helping households in West Singhbhum District, Jharkhand build resilience to drought.

Using an analytical framework, we collected data to understand which resilience pathways were responsible for delivering specific resilience outcomes in a particular context in each state. In this paper, all the evidence we present is relevant to drought in West Singhbhum District only. We used a mixed methodology approach, triangulating primary evidence from: primary data collection in the form of focus group discussions, key person interviews with MGNREGS officials and beneficiaries and a household survey of 150 beneficiary families; secondary data analysis of MGNREGS and climate data; and a review of global and national literature on MGNREGS, social protection and climate resilience. For a more detailed overview of our methodology, see Kaur *et al.* (2017a).

Analytical framework

2

This paper focuses on how four MGNREGS interventions – guaranteed wages, rural infrastructure, institutional strengthening and skills development – enable households to change their livelihood capitals to absorb, adapt and transform to address climate-induced hazards and opportunities.

2.1 Theory of change model

To understand MGNREGS' contribution to resilience, we used a theory of change that identifies the key pathways associated with absorptive, adaptive and transformative resilience. Figure 1 presents an overview of our theory of change for how MGNREGS builds resilience to climate change.

Our theory of change is based on the 'context, mechanism and outcome' framework, derived from realist evaluation methods (Pawson and Tilley 2004), which we discuss below.

2.1.1 Context

'Context' refers to the contextual factors that shape responses to MGNREGS interventions. In this framework, the key contextual factors are a household's exposure and sensitivity to slow and rapid-onset

hazards: droughts in Sikkim, Jharkhand and Odisha; floods in Odisha and cyclones in Andhra Pradesh. In this study, we focus on the exposure and sensitivity of households in West Singhbhum District, Jharkhand to drought.

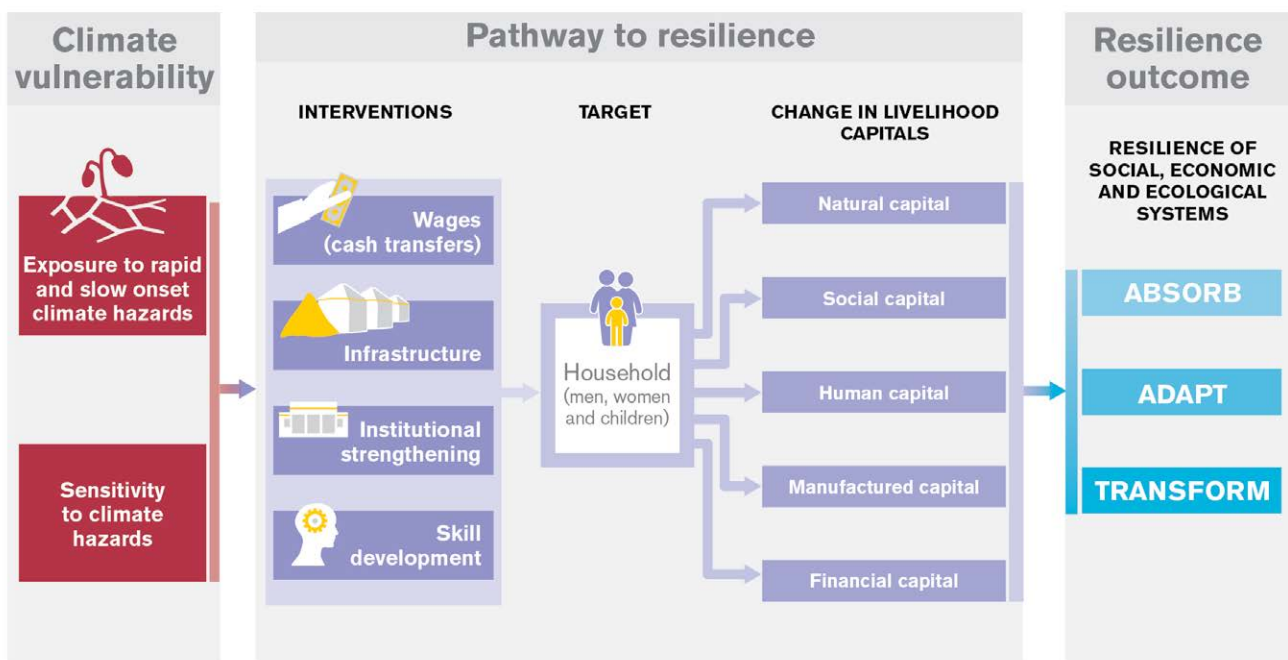
2.1.2 Mechanism

'Mechanism' refers to the four MGNREGS programme instruments discussed below that enable households to change their livelihood capitals to absorb, adapt and transform to address climate-induced hazards and opportunities. These are delivered through MGNREGS alone or in convergence with other government schemes and programmes.

100 days' guaranteed wages: MGNREGS guarantees the provision of up to 100 days' work in rural areas to every household whose adult members volunteer to do unskilled work. In drought-hit states, households can demand 150 days of work. Job card holders can demand wage labour when other sources of income are undermined by climate hazards, making it an implicitly climate-responsive instrument. Households often use income from MGNREGS wages to supplement other sources of income and smooth consumption gaps.

Figure 1: Analytical framework on how MGNREGS contributes to resilience

PATHWAY TO RESILIENCE: USING SOCIAL PROTECTION TO DEAL WITH CLIMATE VULNERABILITY



Creation of individual or public assets: MGNREGS builds public and private rural infrastructure to support long-term livelihood strategies and strengthen the local economy (Gol 2017). This includes infrastructure for:

- Natural resource management: building new flood control structures, planting trees to rehabilitate canal or stream banks and degraded common lands and check-dams to reduce floods and improve water retention
- Agriculture-based livelihoods: irrigation channels, livestock shelters and water and grain storage structures, and
- Non-agriculture-based livelihood activities: sanitation facilities, roads, footpaths and buildings for community use.

Institutional strengthening: MGNREGS strengthens rural institutions to empower rural households and improve programme delivery by:

- Enabling rural households to participate in local governance bodies – such as the village-level *gram sabah* – particularly to make decisions around the allocation of MGNREGS labour and selection of MGNREGS infrastructure.
- Improving rural access to formal banking by linking MGNREGS job card holders to banks and digitising all payments.
- Strengthening community institutions such as producer groups to build collective action, and
- Creating market linkages by converging with other programmes, such as the National Rural Livelihoods Mission.

Skills upgrading: MGNREGS aims to contribute to the transformation of the rural labour market by providing training for unskilled wage labourers, self-employment and upgrading livelihoods. This is a new component under MGNREGS and is being implemented under the Project for Livelihoods in Full Employment (Project LIFE). At the time of this study, this component had only begun implementation in Srikakulam within the past year.

In our study, we assessed whether the four MGNREGS instruments enabled households to positively change their **livelihood capitals** to absorb, adapt or transform to address the impacts of climate change. We focus on how changes in five livelihood capitals – natural, physical, human, social and financial (see below) – serve to link a household's wellbeing with their climate response strategies (Porritt 2007).

BOX 1. WHAT ARE LIVELIHOOD CAPITALS?

Poverty is not just a lack of income. People rely on a **combination of capital assets** to build sustainable livelihoods, particularly:

- **Natural capital:** value that resides in natural resources to produce goods and services
- **Physical capital:** value derived from durable and non-durable infrastructure, which contributes to the production process
- **Human capital:** value derived from skills training, consisting of people's health, skills, knowledge and motivation
- **Social capital:** value derived from social networks and institutions that improve people's social status and help them maintain and develop human capital in partnership with others, and
- **Financial capital:** value derived from income sources, assets and consumption patterns, which enables households to own or trade other capitals.

2.1.3 Resilience outcomes

'Resilience outcome' refers to the ability of social, economic and ecological systems to successfully deal with change by absorbing, adapting and transforming to address complex risks and new opportunities.

Resilience outcome refers to changes in households' ability to respond to climate hazards as a result of changes in the five capitals. Three aspects of resilience outcomes are central to our analysis:

- **Absorptive resilience:** the ability of social, economic and ecological systems to maintain their original structure by absorbing infrequent and low-magnitude risks
- **Adaptive resilience:** the ability of social, economic and ecological systems to improve their original structure to manage future risks and bounce back better when shocks occur, and
- **Transformative resilience:** the ability of social, economic and ecological systems to fundamentally change their structure to move beyond vulnerability thresholds.

MGNREGS in Jharkhand

3

3.1 Background

Fieldwork for this study on MGNREGS and resilience to drought took place in West Singhbhum District, Jharkhand in February 2017. Jharkhand has been slower than other Indian states to implement MGNREGS (Farooquee 2013). The number of households and individuals working under MGNREGS in the state dropped significantly between 2013/14 and 2015/16, but rose back to or above 2012/13 levels in the last year (see Table 1). The 2013–16 drop coincided with an increase in the average number of days worked. Female participation rates in the state are also slightly lower than the Act's minimum 33 per cent target, suggesting that challenges related to women participating in MGNREGS persist (see Kakati and Behera 2014).

Over the past three years, Jharkhand has increased its total expenditure on MGNREGS by nearly 50 per cent and taken important steps to improve the performance of MGNREGS by strengthening its institutions through the CFT project and developing a new state approach to asset creation.

3.1.1 CFT project

Launched in 2014, this project aims to strengthen local institutions by enhancing block and *gram panchayat*-level capacity to deliver MGNREGS. The aim of the CFT project is to increase the number of days rural households work on MGNREGS, reduce

delays in wage payments and improve the quality of MGNREGS assets. Local civil society organisations recruit and train the CFTs, which are made up of small teams specialising in integrated natural resource management, social mobilisation, rural livelihoods and civil engineering. In West Singhbhum, the staff for these CFTs are drawn from local women's self-help groups (rural cooperatives). Today, 219 CFTs operate in 21 districts and 76 blocks across the state to deliver four results: providing at least 75 working days to all scheduled caste and scheduled tribe households who need work; increasing women's participation to 50 per cent of person days; ensuring wages are paid within 15 days; and preparing integrated watershed plans in *gram panchayats*.

3.1.2 Asset creation

The government of Jharkhand has developed a new approach to asset creation under MGNREGS. The 2015/16 drought galvanised the government to use MGNREGS to help reduce farmers' vulnerability to the effects of drought and water stress. Before 2015, the main assets built under MGNREGS were dug wells, large ponds, check dams and rural roads, many of which were poorly maintained.

But recognising the need to improve water availability for farmers, MGNREGS is now focusing on creating individual assets and using integrated watershed management principles to plan them. The state has set

Table 1: MGNREGS implementation in Jharkhand 2012–2017

	2012/13	2013/14	2014/15	2015/16	2016/17
Total expenditure (rupees, billions)	11.52	9.12	10.26	13.31	18.30
Total expenditure (US\$ millions*)	207	149	169	207.5	274
Total households worked (millions)	1.42	1.14	1.11	1.13	1.68
Total individuals worked (millions)	2.28	1.71	1.57	1.57	2.38
Average wage rate per day/person (rupees)	122	138	158	162	167
Average wage rate per day/person (US\$*)	2.2	2.25	2.6	2.5	2.5
Average days employed per household	39.93	38.3	40.81	52.01	39.59
Total number of households completed 100 days of wage employment	N/A	68,861	82,412	174,276	37,160
Women person days (%)	32.72	31.89	32.05	32.75	35.63
Scheduled caste person days (%)	12.8	12.87	13.56	12.07	12.12
Scheduled tribe person days (%)	40.37	37.09	35.55	38.96	32.5

* Converted using rate of 1 August of the earlier year in each column

Source: MGNREGA MIS database. See http://mnregaweb4.nic.in/netnrega/all_lv1_details_dashboard_new.aspx

a target to build 100,000 *dobas* (farm ponds), with the slogan: 'a *doba* on every field'. With these investments, policymakers hope to move agriculture in Jharkhand from a single paddy planting season (*kharif*) to two planting seasons (*kharif* and *rabi*) within five years. In February 2017, government officials estimated that 78,000 *dobas* were under construction.¹ Official data indicate the following trends since the government undertook this new policy direction:

- The number of public works relating to natural resource management – particularly those related to water conservation and watershed management – have nearly tripled in the past five years
- Individual assets (mostly focused on improving land productivity) have increased over the same timeframe and almost doubled – from around 17,000 to 33,000 – in the past year alone, and
- There has been a small increase in rural infrastructure – mostly from rural road connectivity – though officials think these numbers will decline as the MGNREGS focus moves to creating individual assets.²

3.2 Site selection

Fieldwork for our MGNREGS and resilience to drought study took place in West Singhbhum District, Jharkhand, which is ranked 42nd in India's backwards district index (Bakshi *et al.* 2015). Eighty-five per cent of the district's population lives in rural areas; their livelihoods are reliant on rain-fed agriculture and therefore vulnerable to drought. Over the past three years, West Singhbhum has experienced variable conditions for agriculture: there was enough rain in 2016/17; a state-wide drought in 2015/16; and scarce rainfall – but no official drought – in 2014/15.³

Our research draws on interviews and household surveys conducted in two sites:

1. Koira village, Jaipur *gram panchayat*, Hat Gamharia block

Population (Jaipur): 3,198
 Active MGNREGS job card holders: 761
 Active workers: 1,149 (almost 80 per cent from scheduled tribes)
 Main assets built under MGNREGS: small and large *dobas*, dug wells.
 Institutional strengthening initiatives: CFT is active in Hat Gamharia block.

2. Hatna Beera and Pahar Bhanga villages, Asura *gram panchayat*, Jhinkpani block

Population (Asura): 3,112
 Active MGNREGS job card holders: 687
 Active workers: 914 (4 per cent from scheduled castes; almost 64 per cent from scheduled tribes)
 Main assets built under MGNREGS: dug wells; medium-sized *dobas*; desilting traditional water bodies used to store water.
 Institutional strengthening initiatives: Although there is no formal CFT, but local NGO Pradan is performing the same function as a CFT, raising awareness of and improving participation in MGNREGS.

¹ Private communication with MGNREGS officials, Ranchi, February 2017.

² MGNREGS MIS database: http://mnregaweb4.nic.in/netnrega/MISreport4.aspx?fin_year=2013-2014&rpt=RP

³ Private communication with district officials, Chaibasa February 2017.

Climate vulnerability in Jharkhand

4

4.1 Exposure to climate-induced hazards

According to historical data collected by the India Meteorological Department's Drought Management Unit, Jharkhand experienced five moderate droughts over the 130-year period between 1875 and 2004 (Shewale and Kumar 2005).⁴ But since the early 1990s, Jharkhand has experienced a sharp increase in the incidence of drought as a result of climate change, urbanisation and industrialisation (Pandey *et al.* 2014). The state has been hit by several droughts over the past two decades – in 2002, 2003, 2004, 2005, 2009, 2010 and 2015 – a sharp increase compared to historical trends. West Singhbhum was officially declared as drought-affected in all seven of these years.⁵

4.2 Sensitivity to climate hazards

Sensitivity to climate change is the degree to which a community, ecosystem or economy is affected by climate hazards.⁶ Climate sensitivity can be shaped by underlying conditions such as: household income, assets or capabilities; the strength of governance and institutions; economic conditions; or issues of social inclusion based on, for example, gender, caste, religion or ethnicity. All these factors can enable or constrain responses to climate hazards.

Jharkhand's exposure to drought is compounded by its high sensitivity to drought. Agriculture and allied activities are the main source of livelihood for about 80 per cent of the state's 32 million population. But without irrigation, 92 per cent of the state's cultivatable land can only be planted for one season each year and farmers' livelihoods are highly sensitive to fluctuations in precipitation (NIDM, no date).

To understand how sensitive households are to drought in more detail, we conducted a small household survey of 150 households in three villages in Jaipur and Asura *gram panchayats* in February 2017. Our survey collected data (outlined in Box 2 below) on:

- Household income
- Consumption
- Asset ownership

- Capabilities, including the ability to make informed decisions (based on education and technical knowledge) and the ability to participate effectively in local decision making.

BOX 2. HOUSEHOLD WELLBEING IN WEST SINGHBHUM

- 75 per cent have a per capita daily income below the official poverty line
- 85 per cent are active job card holders
- 26 per cent have family members who migrate seasonally for work
- 15 per cent did not have enough food to eat for a period of time during the previous year
- 13 per cent are landless
- 29 per cent have less than one acre of land
- 19 per cent have formal schooling
- 59 per cent report high or medium participation in local governance bodies, such as *gram sabah* meetings, influencing decisions around MGNREGS resource allocation and delivery, and
- 73 per cent have technical knowledge – for example, they know how to select and maintain MGNREGS infrastructure, operate a bank account and agricultural production techniques.

Source: Household survey, West Singhbhum (February 2017)

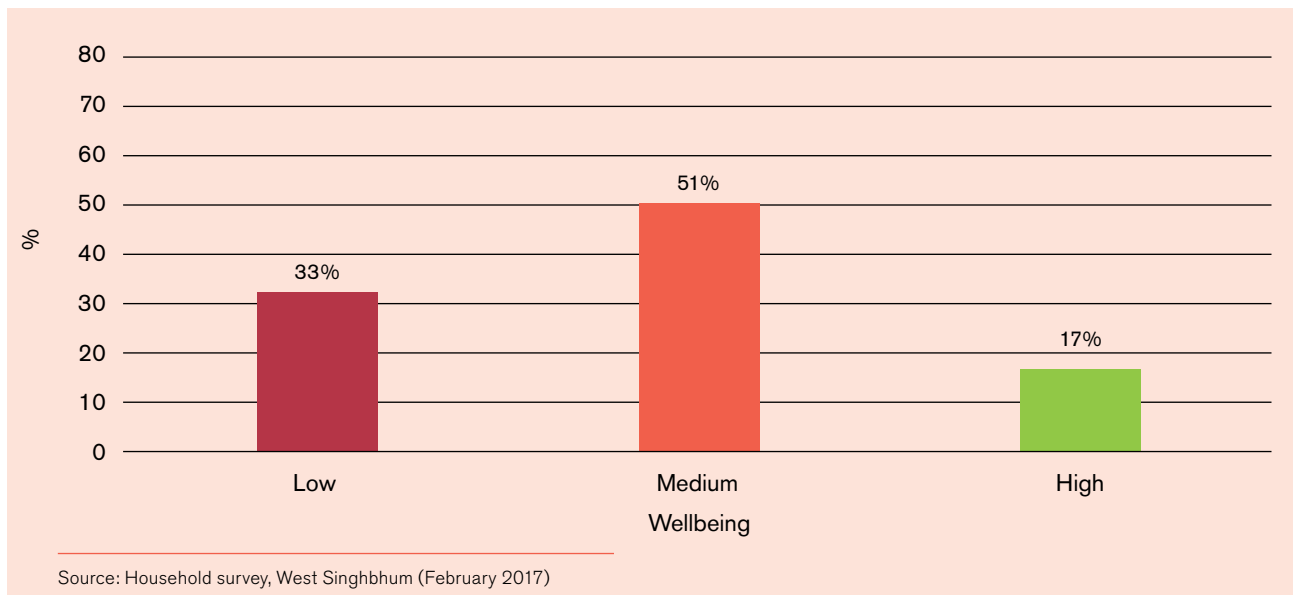
Based on the survey responses, we constructed a composite household wellbeing index that classified sampled households into low, medium and high-wellbeing categories (see Kaur *et al.* 2017a for more details on this process). We classified 33 per cent of sampled households as having low levels of household wellbeing, 51 per cent medium and 16 per cent high. Since participation in MGNREGS is self-targeting for those who need income support at some period of the year, all households within this sample are likely to have lower incomes, assets, education, skills and capabilities than the general population. So, with most households below the poverty line, our aim was to differentiate our findings on MGNREGS contribution to resilience by household wellbeing category.

⁴ Moderate drought is classified as when rainfall is 26–50 per cent lower than average. Severe drought is classified as when rainfall is lower than 50 per cent of average (Shewale and Kumar 2005)

⁵ Farmer drought portal. See: <http://farmer.gov.in/Drought/DroughtReport.aspx>

⁶ CARE, Community-based adaptation toolkit www.careclimatechange.org/tk/cba/en/cba_basics/key_concepts.html

Figure 2: Household wellbeing in West Singhbhum



4.3 Climate change impacts

Our household survey also aimed to understand how climate change has impacted various elements of household wellbeing (including income, assets, education, skills, capabilities and decision-making power), public infrastructure in their community and ecosystem services.

Nearly 30 per cent of respondents in our two study sites indicated that drought had negatively impacted

their wellbeing (Figure 3). But despite the district experiencing a state-declared drought in 2015/16, more than 70 per cent of respondents said that it did not affect their wellbeing. Unpacking the data from our household survey in a little bit more detail, we found that the main impacts of drought were on the provision of critical ecosystem services for agricultural livelihoods (Figure 4), particularly cultivable land, access to water and forestry products.

Figure 3: Impact of drought on household wellbeing in West Singhbhum

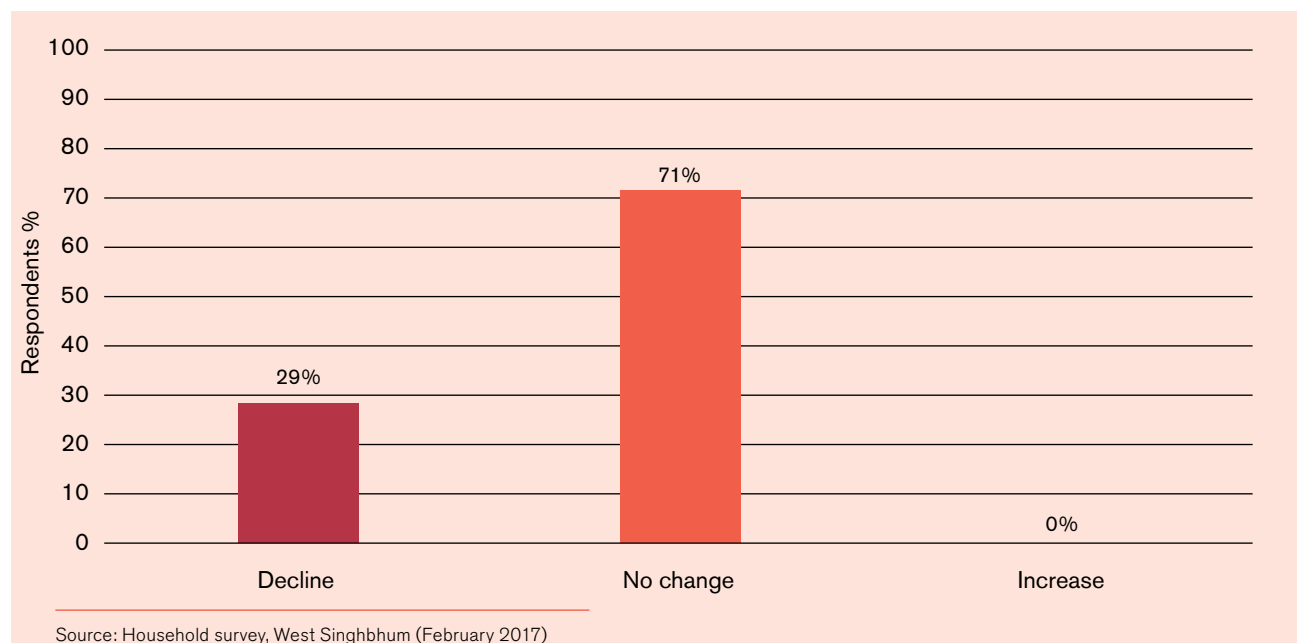
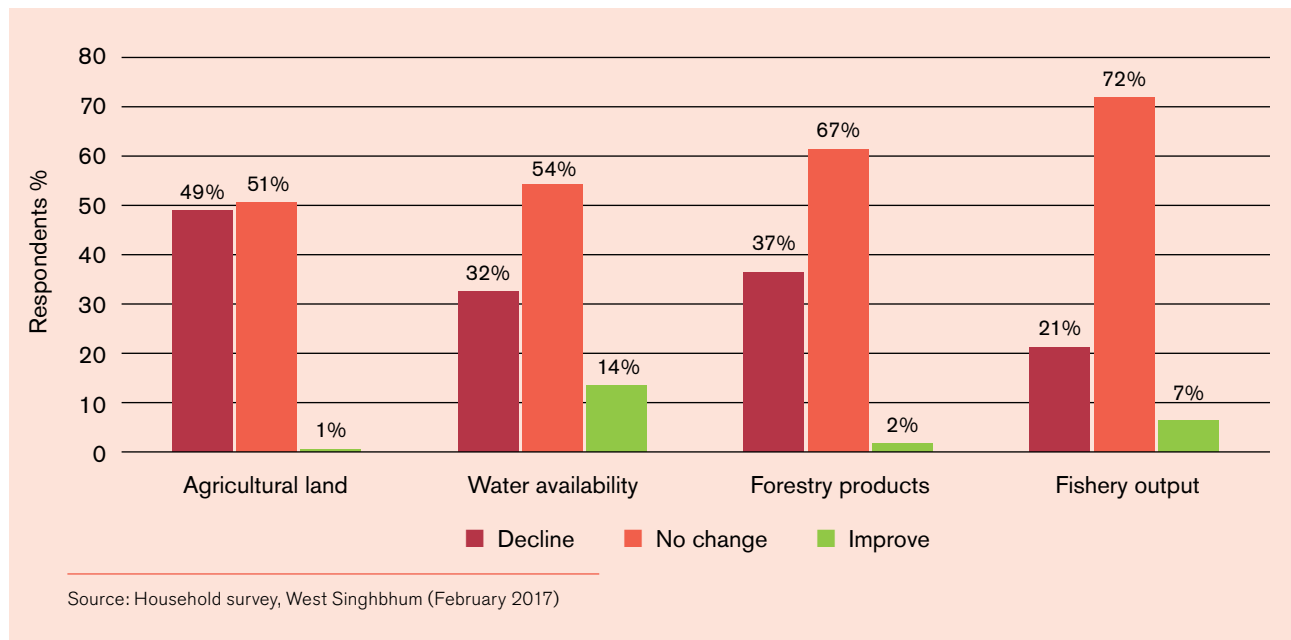


Figure 4: Impact of drought on ecosystem services in West Singhbhum



MGNREGS role in building resilience to drought in Jharkhand

5

Jharkhand is exposed to drought, a slow-onset climate hazard that has increased in frequency over the past decade. This exposure to drought is compounded by the sensitivity of the state's inhabitants, 80 per cent of whom rely on agriculture and allied activities for their livelihood. The vast majority also lack access to irrigation, which would help them manage drought risk. As a result, droughts are likely to have a negative impact on household income, consumption, assets and capabilities and the ecosystem services they rely on, as they increase in frequency in the years ahead.

MGNREGS can help some households to reduce their sensitivity to droughts. This section outlines our main findings on how MGNREGS can build resilience to drought in West Singhbhum's households, local economy and ecosystems.

5.1 Contribution to household resilience

MGNREGS can improve the capacity of households to absorb, adapt or transform in the face of increasing climate risk. This section brings together our analysis from interviews, focus group discussions and our household survey to outline how MGNREGS delivers different pathways to resilience at the household level. We present these findings below in the format outlined in our theory of change (see Figure 1), focusing on the role of MGNREGS instruments and livelihood capitals in delivering resilience outcomes and presenting our high-level findings of how MGNREGS contributes to specific resilience outcomes in West Singhbhum.

5.1.1 Role of MGNREGS instruments

Household survey respondents reported that **guaranteed wages** were the main instrument responsible for changing household capitals and delivering all resilience outcomes in West Singhbhum: absorptive, adaptive, transformative or a decline in resilience. But this emphasis on the central role played by guaranteed wages may mask the accomplishments of the CFT's **institutional strengthening**, which is responsible for significantly increasing MGNREGS participation – and hence the availability of paid wage labour – in the district.

Interviews with MGNREGS beneficiaries and local officials also highlighted the importance of MGNREGS investment in **creating private assets** in helping households build absorptive and adaptive resilience. Small and medium *dobas* helped to improve water availability for irrigation, leading to increased agricultural production and ultimately providing additional income for households to meet their consumption needs or invest in more durable livelihoods.

Interviews with MGNREGS beneficiaries and local officials indicated that **a combination and layering of MGNREGS instruments** – guaranteed wages, institutional strengthening and investment in private infrastructure – was important in helping households build absorptive and adaptive resilience in West Singhbhum.

5.1.2 Livelihood capital contribution to resilience outcomes

MGNREGS investment in assets has increased **physical capital** in the form of *dobas*, dug wells and irrigation pumps, which has helped improve **natural capital** in the form of water availability, crop diversity and agricultural production, boosting **financial capital** through increased income earned from agriculture.

Institutional strengthening has led to increases in **social capital**, as the CFT and local NGOs use women's self-help groups to raise awareness on MGNREGS in our study *gram panchayats*. This, in turn, has increased access to guaranteed wages, helping boost **financial capital**.

In some cases, access to financial capital has helped households maintain wellbeing, leading to absorptive resilience as households benefit from improved **human capital** through expenditure on education, healthcare and other basic services that help them maintain wellbeing.

In other cases, households have improved their wellbeing, leading to adaptive resilience.

We found that improvements in **physical** and **social capital** were more likely to lead to adaptive resilience than other outcomes.

5.1.3 Resilience outcomes

Absorptive resilience

Nearly 25 per cent of the households we interviewed in West Singhbhum reported that they had absorbed the impact of drought as a result of MGNREGS. Medium-wellbeing households in our survey sample were three times more likely to build their absorptive resilience than high and low-wellbeing households. A combination of MGNREGS instruments – discussed below – were important in helping households build absorptive capacity.

- **Guaranteed wages**, the main instrument responsible for delivering absorptive resilience, boost financial capital, which households can spend on food, clothing, education and health services, leading to improvements in human capital. In both study areas, peak MGNREGS work demand is from December to June, which immediately proceeds the *khari* planting season. This means MGNREGS workers

can use their wages as a safety net to fund household consumption and absorb the impact of drought.

- **Institutional strengthening** is an important initiative to help improve household access to guaranteed wages in Jharkhand. CFT teams, led by women's self-help groups, raise awareness of MGNREGS entitlements and help households access financial services. Representatives of women's self-help groups in one of our study sites (Jhinkpani) reported that CFT and support NGOs have improved people's understanding of MGNREGS, encouraging more community members to work under the scheme, more women to participate in *gram sabhas* and ensuring that MGNREGS assets are more durable. As a result, households have improved their financial capital, helping them to manage the impact of drought when it occurs.
- Some households in the absorptive resilience category have also benefited from physical capital in the form of **MGNREGS infrastructure**, such as small and large *dobas* and dug wells. These assets have increased natural capital in the form of water, cultivable land and higher vegetable or paddy yields, which in turn has boosted household financial capital through sales of agricultural produce. Households can use this financial capital in combination with guaranteed wages as a safety net when drought occurs, ensuring they can absorb shocks. Evidence from our field interviews in both Jaipur and Asura shows that *dobas* can boost household income by 50,000 rupees (around US\$780) through the cultivation and sale of vegetables. One interviewee in Asura told us that her household used MGNREGS wages, vegetable sales and savings to maintain income and consumption during the 2015/16 drought.

Adaptive resilience

Twelve per cent of the households we interviewed in West Singhbhum reported that they had improved their wellbeing through MGNREGS despite the impact of drought.

Like our findings for absorptive resilience, a combination of MGNREGS instruments was important in helping households achieve adaptive resilience. We have already discussed how CFT institutional strengthening has increased participation in MGNREGS wage labour, leading to improved human, social and financial capital. In parallel, the construction of new water conservation infrastructure (*dobas*) and support from the Department of Soil Conservation to buy subsidised irrigation pumps (both physical capital), have increased natural capital in the form of water for irrigation, leading to higher levels of agricultural production.

BOX 3. HOW LAYERING MGNREGS INSTRUMENTS CAN BUILD ADAPTIVE RESILIENCE

In Hatna Beera village, MGNREGS has helped 12 households build adaptive resilience through a combination of guaranteed wages, support to desilt a traditional water body and build dug wells and the provision of water pumps from the Department of Soil Conservation at a 90 per cent subsidised rate.

This has increased the availability of water, and households are now cultivating four or five (rather than one) acres of land and growing paddy in both *kharif* and *rabi* seasons. As a result, annual household incomes have increased from 30,000–40,000 to 200,000 rupees (US\$470–620 to US\$3,115). Farmers report that they are sending their children to mission schools outside the village and investing more in seeds and fertilisers. They have also been able to buy life insurance and increase their savings three- or fourfold. These farmers have now graduated from MGNREGS and employ on average four to five labourers on their farms. Even in times of drought, they can earn 50,000 rupees (US\$780), which is more than they earned before the creation of MGNREGS assets.

The difference between households that have built adaptive resilience, like those in Hatna Beera, and those that have built absorptive resilience is that MGNREGS has helped the former improve their wellbeing (in terms of consumption, income, assets and capabilities) despite more frequent and severe drought in the district, while the latter can only maintain their wellbeing in the face of these hazards. High-wellbeing households are nearly twice as likely to adapt as medium and low-wellbeing households.

There are multiple possible explanations for this difference. It could be that *dobas* and dug wells created under MGNREGS have not provided enough water to irrigate fields and improve incomes through increased agricultural production, which would reduce farmers' sensitivity to drought. Or it could be that the coverage of MGNREGS *dobas* has not extended to the majority of our respondents, leaving them exposed to drought and reliant on MGNREGS wages to support consumption when climate shocks occur. Both explanations highlight two important recommendations for MGNREGS policymakers in Jharkhand: first, to extend the coverage of water conservation infrastructure and second, to ensure that the design and location of these structures are tailored to meet local demand for access to water.

Transformative resilience

Two per cent of our survey households in West Singhbhum have improved their capacity to transform their livelihoods in the face of drought as a result of MGNREGS. These results are not statistically significant enough to draw any definitive conclusions on how MGNREGS delivers pathways to transformative resilience in the context of drought in West Singhbhum.

Hybrid resilience

Thirteen per cent of our survey households did not fall into a specific category of building absorptive resilience, adaptive resilience or registering a decline in resilience despite MGNREGS. We have classified these as hybrid households.

Decline in resilience

Half of our survey households reported a decline in resilience during the 2015/16 drought, despite the contribution of MGNREGS, with women more likely to report a decline than men. High-wellbeing households were also more likely to report a decline in resilience than low and medium-wellbeing households.

There are several possible explanations for this. First, the households in our survey may have been particularly exposed to drought in 2015/16. Second, MGNREGS interventions may not have been enough to reduce many households' sensitivity to drought. Interviews with officials and MGNREGS job card holders provide some important lessons on where MGNREGS could be strengthened to help households manage drought risk better:

- Although institutional strengthening has helped improve MGNREGS participation in West Singhbhum, access to MGNREGS job cards and delays in wage payments remain a challenge. Strengthening MGNREGS institutions further, to help households access more working days, improve access to financial services and reduce barriers to wage payment, would help increase MGNREGS coverage and contribute to reducing households' sensitivity to drought.
- MGNREGS should also extend the coverage of water conservation assets to more households, and improve the planning and delivery of infrastructure projects. Box 4 outlines the importance of effective planning and delivery of MGNREGS assets.

BOX 4. THE IMPORTANCE OF EFFECTIVE PLANNING AND DELIVERY OF INFRASTRUCTURE PROJECTS

Jharkhand has launched an important initiative to improve irrigation infrastructure, but the top-down push to meet the government targets of building 20,000 *dobas* in West Singhbhum or five in every village means that landscape management principles are not always followed. As a result, these investments have not realised their full potential in reducing household sensitivity to drought.

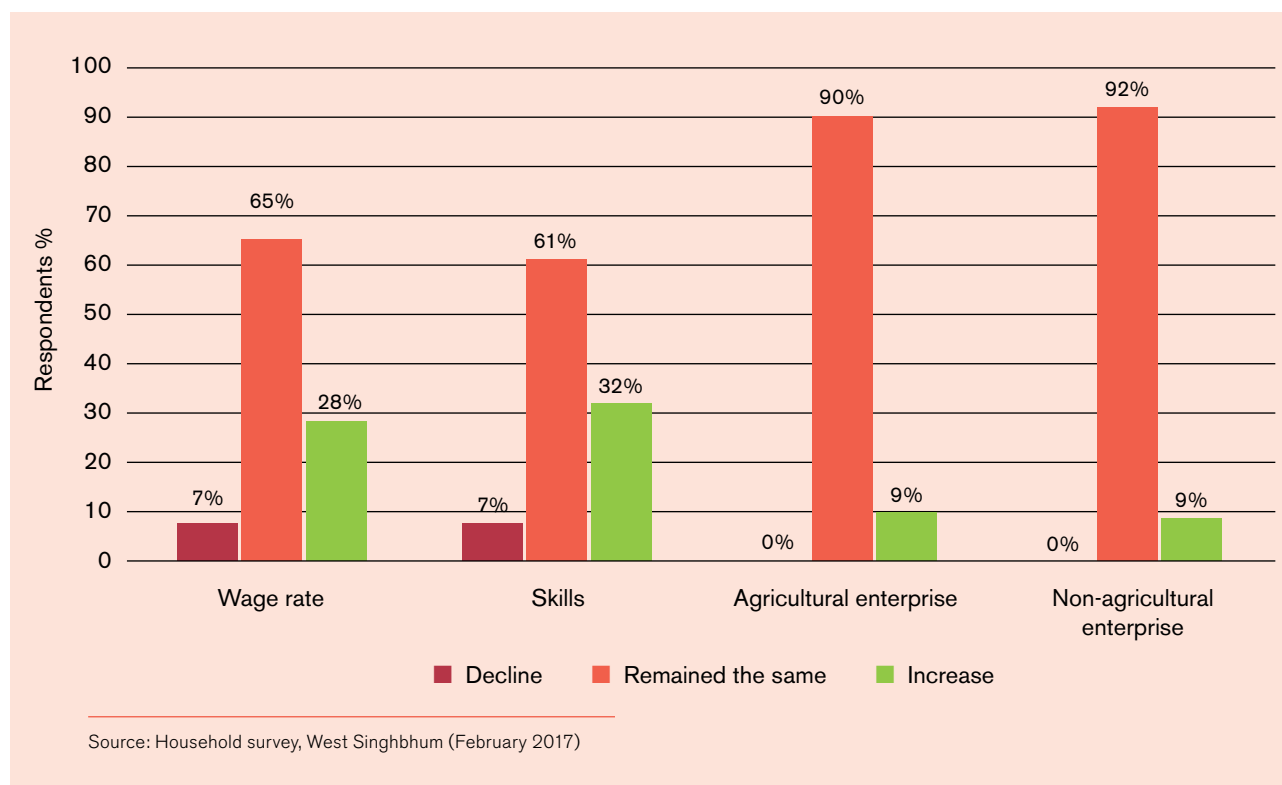
In some cases, *dobas* were not positioned in the best place to capture water; in others, they were built in places more suitable for other assets. The size of the *dobas* (30m x 30 m x10m) is not always enough to boost a household's wellbeing to a level where it can effectively manage drought risk, or improve its wellbeing despite exposure to drought. In both our study areas, the amount of additional water the small *dobas* collected was not enough to grow a second paddy crop, so they rarely led to adaptive resilience.

In Hatna Beera (Box 3), where households have adequately adapted to climate risk and can now grow crops in both *kharif* and *rabi* seasons, households benefited from much larger water conservation infrastructure. It is clear that better planned and larger water conservation infrastructure, extended to more households, would help improve resilience outcomes in West Singhbhum.

5.2 Contribution to resilience in the local economy

Our study shows that the impact of MGNREGS extends beyond the household into the local economy, with 32 per cent of respondents reporting a change in skills 28 per cent a higher local wage rate and 10 per cent an increase in the number of local enterprises. These findings show that MGNREGS has provided important additional benefits to some households in West Singhbhum, on top of the main focus on wage provision and construction of water conservation infrastructure. But there are stronger findings on how MGNREGS leads to changes in ecosystems services (see Section 5.3), which in turn drive changes in the local economy in the district.

Figure 5: Changes in the local economy as a result of MGNREGS

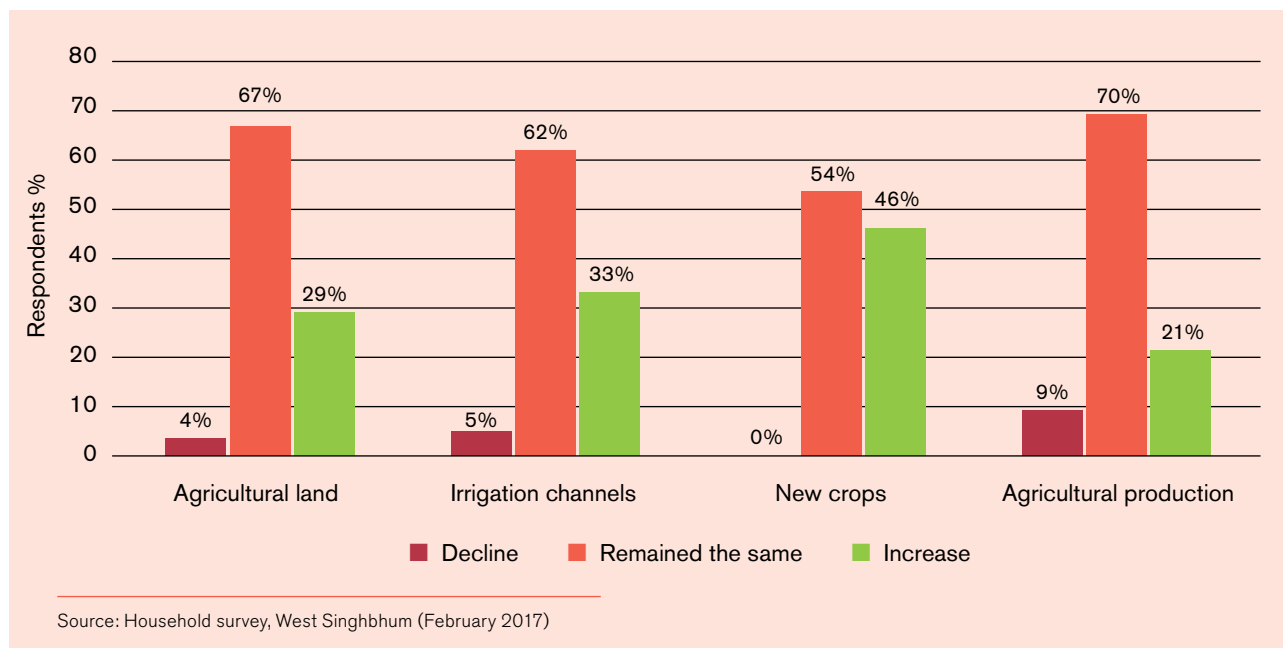


5.3 Contribution to resilience of ecosystems

MGNREGS has also led to improvements in ecosystems services, with 33 per cent of respondents reporting improvements in water availability and irrigation, 29 per cent increased availability of agricultural land, 21 per cent increased agricultural productivity and 46 per cent increased crop diversity. These findings confirm that the MGNREGS has helped build natural capital for many households in West Singhbhum, which has helped households maintain or improve their wellbeing despite increasingly frequent droughts.

But more than half our sample households reported no change to agricultural production, irrigation infrastructure, the availability of agricultural land or crop diversity, suggesting that MGNREGS is either not extending improved water conservation practices to a large number of our sample households, or that these households are only able to maintain – but not improve – their agricultural livelihoods in light of more frequent and severe drought. A small portion of households also reported a decline in ecosystem services. Both these findings may explain why half our survey households have experienced a decline in wellbeing as a result of drought in 2015/16.

Figure 6: Changes in ecosystems services as a result of MGNREGS



Looking forward

6

Policy Recommendations

Drawing on lessons from our case study in West Singhbhum, research from the three state briefings that accompany this report (Steinbach *et al.* 2017a and 2017b; Kaur *et al.* 2017b) as well as a meta-analysis of social protection and climate resilience literature (Agrawal *et al.* 2017), we make the following recommendations for policymakers, to strengthen MGNREGS' contribution to resilience in the household and local economy.

1. Deliver a combination of MGNREGS instruments to provide a stronger foundation to build resilience.

Our research suggests that households who have access to multiple MGNREGS instruments are better equipped to manage climate hazards. In West Singhbhum, the combination of guaranteed wage labour, institutional strengthening and the creation of assets that improve the supply of water have combined to build absorptive and adaptive resilience. Half our sample households have not built resilience through MGNREGS interventions due to high exposure to drought, low coverage of MGNREGS irrigation assets and design and site selection choices that have not provided enough water for irrigation. But in the households that have built absorptive and adaptive resilience, we can see that they needed access to both MGNREGS wages and assets (supported by institutional strengthening) to achieve these outcomes.

2. Integrate climate risk management into MGNREGS programming to strengthen households' ability to build resilience to climate hazards and respond to new opportunities (see Figure 7).

Our research found that MGNREGS can build absorptive, adaptive and transformative resilience through its main programme instruments – particularly where a household benefits from a combination of these instruments. But evidence from West Singhbhum shows that resilience outcomes are spread unevenly among our sample households, with many households still not experiencing improved resilience outcomes. The following options can help policymakers integrate climate risk management into the delivery of different MGNREGS instruments, to improve their delivery of climate resilience.

a. Climate-resilient wage labour:

- Continue to deliver scaled up MGNREGS labour in response to climate hazards and develop procedures to scale up MGNREGS wages rates and deliver payments before shocks occur. To deliver anticipatory

payments, the government will need to invest in climate information systems to recognise rapid and slow onset climate shocks in their initial stages; developing scenarios with parameters and thresholds that trigger payments; and establishing operational guidelines and appropriate delivery structures for anticipatory payments.

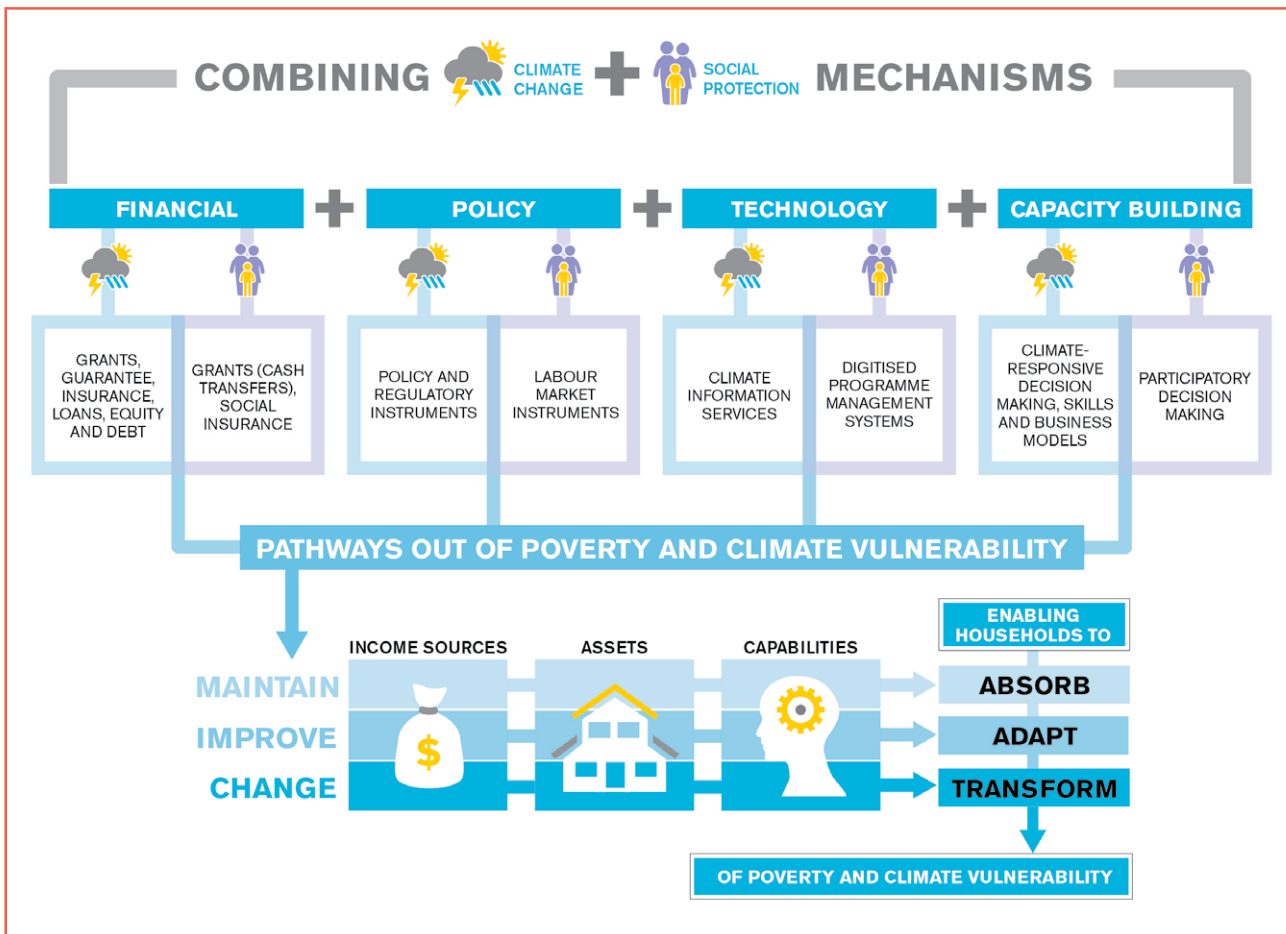
- Provide clear information to households on changes to MGNREGS daily wage rates and the number of available working days in response to climate hazards. Although MGNREGS already has a process for increasing both these days and wage rates, many beneficiaries felt that decisions to trigger these changes are unpredictable, non-transparent and unevenly applied. With improved information and communication, households can plan appropriate risk management strategies and decide how best to engage in MGNREGS wage labour when climate hazards occur.
- Revise the MGNREGS wage rate during climate hazards to ensure households earn enough to meet their consumption needs. While in some cases MGNREGS offers increased wages to help households cope during climate hazards, many beneficiaries felt these wages are still insufficient for household consumption during this time. To ensure household consumption is not impacted by climate hazards, we recommend the MGNREGS wage rate increases are tied to a consumer price index of basic household goods that is adjusted for inflation caused by the hazard.

b. Climate-resilient infrastructure:

- Ensure that the design, selection and construction of MGNREGS assets is flexible and appropriate to localised climate risk. MGNREGS should integrate climate information and spatial planning tools for land use, landscape management and watershed approaches when identifying, designing, building and maintaining MGNREGS assets.
- Sanction the construction of material-intensive assets – such as large water storage infrastructure to manage droughts – that will build community resilience. Additional material budget can be covered through convergence with other schemes.
- Create infrastructure that helps highly exposed households transition away from agricultural livelihoods into new activities that are less exposed and less sensitive to climate hazards.

- Develop new asset categories that create new livelihood opportunities in low-carbon and climate resilient development. This could include off-grid renewable energy infrastructure or other investments in green technology.
- c. **Climate-resilient local institutions:**
- Support local institutions – such as *gram sabahs*, MGNREGS technical engineers and social auditors – to use climate information and spatial planning tools to improve decision making, planning and construction of MGNREGS assets that help manage climate risk. While this is the objective of policymakers in the state capital Ranchi, our field visits found that landscape management planning for the selection and placement of *dobas* was not yet being consistently implemented in West Singhbhum.
 - Continue to support households to access formal banking institutions.
 - Link financial access to investments in climate-resilient livelihoods by training rural banking institutions to promote investment in locally-appropriate, climate resilient activities such as improved access to irrigation; climate-resilient agriculture that increases productivity of farms and reduces the climate sensitivity of households; or renewable energy and other green technologies.
 - Create new cooperatives or businesses in sectors that are less exposed or sensitive to climate hazards.
- d. **Climate-resilient skills:**
- Develop skills training programmes – for example, through Project LIFE or convergence initiatives – to help households develop climate-resilient livelihoods. This could include existing livelihood activities in a community or introducing new activities such as small-scale renewable energy to help households transition away from climate-sensitive sectors and promote green growth in rural areas.
 - Train barefoot engineers and engineering consultants to identify, design and construct climate-resilient and low-carbon infrastructure that reduces households' exposure and/or sensitivity of households to localised climate risk and is tailored to communities' current livelihood needs and future livelihood opportunities.
3. **Converge MGNREGS with other initiatives, schemes and programmes that support climate risk management** to build more resilient households and communities. This can also help programme implementers spread the financial and delivery costs of resilience activities. There will need to be additional dialogue to identify convergence options that build absorptive, adaptive or transformative resilience. Some options for convergence include:
- a. Improving the absorptive function of ecosystems by supporting farmers with drought-tolerant seeds or horticultural activities that are less sensitive to the impact of drought.
 - b. Improving agricultural livelihoods that help households absorb shocks or adapt to become less sensitive to climate hazards. Interventions could include: increasing access to irrigation; introducing new agricultural practices or crops, such as drought-resistant horticulture; helping farmers develop cooperatives or agricultural businesses by providing them with skills training, infrastructure investment, marketing and distribution support; and building new productive assets that improve agricultural production. In some cases, building larger, more material-intensive assets – such as large water storage tanks for irrigation – may be more effective in delivering resilience outcomes. Here, MGNREGS can supply labour and 40 per cent of the material cost, with partnering agencies bearing the additional material cost.
 - c. Helping households transform their livelihoods away from activities that are exposed or sensitive to climate hazards. This could include skills training for non-agricultural livelihoods through Project-LIFE; partnering with public agencies or private companies to build new renewable energy or green technology infrastructure; or helping households access financial services to invest in new business ventures.
4. **Ensure that MGNREGS interventions promote spillover benefits to the local economy and the provision of ecosystems services** to create more resilient communities.
- Recommendations 1–3 focus on helping households to build resilience. But these efforts can be strengthened by ensuring that resilience building also creates positive feedback loops to the local economy and natural environment. A stronger local economy and improved ecosystems services will, in turn, lead to more resilient households and by extension, more resilient communities.

Figure 7: Combining and layering climate risk management and social protection instruments



Acronyms

CFT	Climate Facilitation Team
LIFE	Livelihoods in Full Employment (Project)
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme

Related reading

Agrawal A *et al.* (2017) Social protection programmes and climate resilience: a review and meta-analysis. IIED

Kaur, N *et al.* (2017) Building resilience to climate change: MGNREGS and climate risks.

Kaur, N *et al.* (2017) Building resilience to climate change: MGNREGS and climate-induced droughts in Sikkim. IIED issue paper. <http://pubs.iied.org/10184IIED>

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The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is one of India's flagship social protection programmes. This paper is part of a series of briefings that analyse how MGNREGS builds the resilience of rural households to different climate shocks. The goal of the series is to identify options for Indian policymakers to integrate climate risk management into MGNREGS. It will also provide global policymakers with evidence on how to mainstream climate risk management into social protection programmes, or combine and layer social protection instruments with climate risk management instruments to address poverty in the context of climate change.

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