

Aligning social protection and climate resilience

A case study of WBCIS and MGNREGA in Rajasthan

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Produced by IIED's Climate Change Group

Climate change disproportionately affects the poorest people in the world. The Climate Change Group works with policy and research partners to redress the balance by helping the poor in low and middle-income countries achieve climate resilience and development.

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Acronyms

AFC	Agricultural Finance Corporation
CC	climate change
CCE	crop-cutting experiment
CCIS	Comprehensive Crop Insurance Scheme
CMO	context, mechanisms and outcomes
CR	climate resilience
GSSS	Gram Sewa Sahkari Samiti
IU	insurance unit
KCC	Kisan Credit Cards
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MGNREGA-EB	MGNREGA-Environmental Benefits programme
mNAIS	modified National Agricultural Insurance Scheme
NAIS	National Agricultural Insurance Scheme
PCIS	Pilot Crop Insurance Scheme
PMFBY	Pradhan Mantri Fasal Bima Yojana
PSNP	Productive Safety Net Programme
SDRF	State Disaster Response Fund
SP	social protection
WBCIS	Weather-Based Crop Insurance Scheme

Social protection and climate change programmes are two public policy responses that governments use to address the challenges of poverty, climate vulnerability and gender inequality. Social protection programmes provide a safety net for households by providing cash/asset transfers and labour market instruments to address the immediate and underlying socio-economic risks facing the poor. Climate change programmes use a range of policy, financial, technological and capacity-strengthening measures to address climate change vulnerability. Despite the fact that most countries have comprehensive strategies for both social protection and climate change, there have been few attempts to align the two to develop more durable pathways out of poverty and climate vulnerability.

This paper is the second of two case studies that examine how aligning social protection and climate change interventions could help households manage the risks they face, and set them on a path out of poverty and into climate-resilient livelihoods. It presents a case study of the Weather-Based Crop Insurance Scheme (WBCIS) and the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in India, based on fieldwork in the northwestern state of Rajasthan.

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Glossary

Actuarial rate	An estimate of the expected value of future loss, based on historical loss experiences.
Area-based approach	Insurance scheme under which insurance payments are based on an estimate of overall crop production within a defined geographical area, determined by harvest production measurements taken at a series of randomly chosen crop-cutting experiment locations, and compared to historic yields within the area.
Basis risk	The risk that an insurance payout does not correspond with the actual loss that the policyholder has experienced
Claim	A payment made by an insurance company based on the terms of an insurance policy.
Crop-cutting experiment	Sampling process by which crop yields are statistically estimated in each insurance unit.
Gram Panchayat	Village-level unit of self-government in rural India.
Gram Sabha	Meeting of adults who live in a Gram Panchayat. Gram Sabha meetings are held to elect the members of the Gram Panchayat and to discuss important issues at the village-level.
Kharif	The monsoon planting season (rainy season), which runs from July to October.
Patwari	Government officials who keep records on the ownership of land and collects revenues at block level in India. Patwaris are responsible for overseeing crop-cutting experiments.
Premium	The amount of payment required by an insurer to provide insurance coverage for the duration of an insurance plan. Crop insurance in India requires farmers to pay fixed premiums at the beginning of each planting. These premiums are below the actuarial rate, with the government subsidising the rest of the premium.
Rabi	The winter planting season, which runs from October to March or April.
Sarpanch	The elected leader of a gram panchayat.
Weather index insurance	Insurance coverage which pays out claims based on measurements of specific weather parameters that deviate from historical trends by a pre-determined threshold.

Summary

Social protection (SP) and climate change (CC) programmes are two public policy responses that governments use to address the challenges of poverty, climate vulnerability and gender inequality. SP programmes provide a safety net for households by providing cash/asset transfers and labour market instruments to address the immediate and underlying socioeconomic risks facing the poor. CC programmes target climate-induced risks to livelihoods, such as the loss of assets through flooding and drought. They include an evolving range of policy, financial, technical and capacity-strengthening measures to address the underlying causes of climate-induced vulnerability and the immediate and long-term impacts of climate change.

Although most countries have comprehensive strategies for both SP and CC, few have attempted to align them. In practice, they remain in separate institutional homes, governed by their own intra-sector coordination groups and funding channels. This limits their potential to develop synergies for more sustained, durable efforts to reduce social, economic and environmental vulnerability.

This paper is the second of two case studies from India that examine how aligning SP and CC could help households manage risks and move out of poverty into climate-resilient (CR) livelihoods. Our research focuses on three main questions:

1. Do standalone policy responses deliver outcomes that enable households to hang in, step up and step out of poverty and climate vulnerability?
2. What are the underlying mechanisms and processes that support SP and CR outcomes in standalone policy responses?
3. How could standalone SP and CC policy responses be aligned in practice to provide better opportunities for poor households to hang in, step up and step out of poverty?

To understand how SP and CC could be aligned, this case study analyses the Weather-Based Crop Insurance Scheme (WBCIS) and the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). WBCIS is a crop insurance scheme that covers farmers for crop loss due to changing climate patterns. MGNREGA is a state-led labour guarantee initiative that pays households wages in exchange for their work constructing rural infrastructure linked to local livelihoods. Both programmes help rural people manage risk and smooth consumption during shocks. They are

the largest schemes of their type in the world, making them ideal case studies for examining how SP and CC programmes could converge to reduce poverty and build resilient livelihoods. Our analysis draws on field research in the district of Jhunjhunu in rural Rajasthan.

Mechanisms

WBCIS provides farmers with insurance payments to cover climate-related crop losses based on locally-measured climate impacts. To achieve its aims, WBCIS must incentivise private sector insurers to participate in the scheme, ensure that insurance is accessible to farmers and provide adequate, accurate, predictable and timely payments to help farmers respond to climate-related losses. Insurance delivery under WBCIS is characterised by four mechanisms: **Financial incentives** ensure that both private sector insurers and farmers are willing to participate. Insurance companies benefit from government subsidies and the financial security provided by international reinsurers. National and state governments heavily subsidise farmers' premiums. **Mandatory insurance for farmers who take bank loans** guarantees high levels of uptake in rural areas. **Tailored insurance** products for each district based on historic weather data, local input prices and the main crops grown locally are used to increase the accuracy of payouts. **Weather-based indexes** measured by automated systems are used to accurately capture local climate parameters (rainfall, temperature, humidity, wind speed and fog) and automatically transfer payments to farmers' bank accounts.

To achieve its social protection objectives, MGNREGA must provide guaranteed, predictable, timely, transparent and inclusive wages. In addition, the projects undertaken by participants must be durable, complement livelihood needs and be resilient to the impact of climate change. Four mechanisms underpin these outcomes. **Legal instruments** guarantee labour to households, formal contracts for wageseekers and equal wage provisions for women. State governments can also issue legal decrees known as 'circulars' to implement climate-responsive measures, such as allowing households to work additional days during climate shocks to help support household consumption needs. **MGNREGA's regulatory system** sets standard procedures for wage payments, specifications for project standards and seasonal and regional variations in daily wage rates. **New technology** such

as digitised payment procedures reduces opportunities for corruption or manipulation. **Financial services** are important to ensure predictable, transparent and timely wage payments to MGNREGA wageseekers.

Hanging in, stepping up and stepping out

Evidence from Jhunjhunu suggests that these two standalone interventions are currently not achieving their full potential to help rural households hang in, step up and step out of poverty and climate vulnerability.

Structural barriers to accessing loans prevent many poor households from accessing crop insurance. Even for those who can access insurance, there are limits to the extent to which WBCIS can help them hang in when climate impacts occur. To be an effective safety net during a climate shock, farmers need to receive adequate, accurate, predictable and timely payouts. But according to farmers in Jhunjhunu, several design features of WBCIS restrict their ability to rely on the system as a safety net during shocks. These include the fact that WBCIS does not cover the full value of farmers' expected yields in the event of crop loss, the poor correlation between on-farm loss and impacts measured at distant weather stations (known as basis risk), the lack of transparency on the release of weather data, low levels of understanding of the insurance claim process and the timeline of insurance payouts occurring after climate impacts have occurred. Due to WBCIS's inability to provide adequate, accurate, transparent and timely payments, the farmers we interviewed in Jhunjhunu could not invest their claims payouts into alternative livelihood activities that would allow them to step up by accumulating income, assets or capabilities.

MGNREGA, on the other hand, can help households protect income and assets despite their increasing climate vulnerability. In Jhunjhunu, MGNREGA is delivering guaranteed, predictable, transparent and timely wage payments to poor households. But as a result of low wages rates, MGNREGA wages are used almost exclusively for day-to-day spending and not for investment in alternative household livelihoods. Further, although MGNREGA could help households step up and out by providing opportunities to accumulate and/or diversify assets, few durable projects have been built in Alsisar and Chirawa. This shows there is both a gap and an opportunity to help households step up and out of poverty into more climate-resilient livelihoods.

Opportunity for layered SP and CC alignment

In Jhunjhunu we found that different social and economic groups are more likely to access MGNREGA and WBCIS. Poorer households and those without land tend to use MGNREGA during non-farming seasons to boost household income – in many cases with women using the allotted household days for MGNREGA while men work as wage labourers on larger farms or seasonally migrate. Among our interview respondents, MGNREGA is particularly important for households in Alsisar who lack access to irrigation. By contrast, wealthier households often have land titles and can therefore take out agricultural loans, thereby automatically enrolling themselves into WBCIS. This variation in socio-economic access to MGNREGA and WBCIS suggests there is an opportunity for a **layered approach** to aligning the two programmes, where SP and CC programmes are delivered sequentially in the same area, targeting the same beneficiaries over time as they accumulate savings and assets. In this scenario, greater access to financial instruments (grants for MGNREGA wages, subsidies for WBCIS premiums and insurance payments in the event of crop loss) and more diverse sources of finance (national public finance for MGNREGA wages and WBCIS premiums, national and international private finance for insurance claims payments and re-insurance coverage) would help households protect and accumulate income, assets and capabilities.

However, there are a number of contextual constraints and design features of WBCIS and MGNREGA which hold back poor households from moving along a pathway from dependence on guaranteed labour schemes to being able to access insurance. If policymakers want to improve SP and CR outcomes for the poorest and most vulnerable, they must adopt a two-pronged approach to overcome these constraints. First, they must address gaps in the technical design and local implementation of WBCIS and MGNREGA which limit the ability of these programmes to help households hang in, step up and step out. Second, they must address structural barriers that limit the ability of the poorest households to access WBCIS either sequentially or simultaneously with MGNREGA.

Next steps

For **WBCIS**, several factors would help farmers hang in. Improved levels of transparency surrounding payments and the claims process could help farmers plan more effectively in the event of crop loss. Greater investment in automated weather stations could improve the accuracy of crop loss assessment and claims payments. Early payments for lost sowing opportunities or early season crop losses could help farmers cope and develop alternative livelihood strategies. Reforming insurance to cover predicted income from crop yields as opposed to the cost of cultivation could also allow households to step up by investing in new livelihood strategies.

For **MGNREGA**, higher wages would help households accumulate savings, which they could use to manage risk during shocks, invest in alternative livelihoods or support the education of their children. Improved capacity to plan and design durable, climate-resilient projects could also help households step up and

step out by accumulating or diversifying their assets and capabilities. For example, in Alsisar, MGNREGA wageseekers could build irrigation facilities and other infrastructure that supports water management and improved farming practices in the context of increasing drought.

To promote better alignment between MGNREGA and WBCIS, policymakers also need to address structural constraints that limit the ability of the poorest and most vulnerable to benefit from both schemes simultaneously or sequentially. The biggest constraint poor households face in accessing WBCIS is their lack of ability to qualify for agricultural loans, which are used to automatically enrol borrowers into the scheme. In many cases, obtaining such loans requires land titles, collateral or guarantees from the landlord who owns a tenant farmer's land. Reforming such rules and extending financial services to a greater number of the landless poor could provide greater crop insurance coverage to MGNREGA beneficiaries.

Introduction



Climate change (CC) poses a significant challenge to development. For the poorest households and communities, it has the potential to reverse development gains made in recent decades and to reinforce the underlying drivers of poverty and inequality that keep millions of people below the poverty line (IPCC 2014).

Social protection (SP) and climate change policy responses share overlapping goals. Both target similar people, helping them protect their livelihoods against social, economic, environmental and political shocks. Until recently, SP and CC responses have been implemented separately by different actors working in institutional silos. But at the conceptual level, resilience has emerged as a unifying concept that bridges both social protection and climate change.

There is growing support for the argument that resilient SP schemes could help the poor to withstand climate shocks and build their adaptive capacity (Heltberg *et al.* 2009; Johnson *et al.* 2013; Davies *et al.* 2013). As a result, a growing number of programmes are being designed with both climate resilience and social protection objectives (Béné *et al.* 2014). However, there is a lack of evidence documenting successful approaches to aligning SP and CC in different contexts.

This paper aims to address this evidence gap by analysing SP and CC programming in India and outlining practical solutions to align the two. It is the second of two companion studies examining SP and CC alignment. The first (Steinbach *et al.* 2016) examines the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and the MGNREGA-Environmental Benefits (MGNREGA-EB) programme. MGNREGA, India's largest social protection scheme, provides 100 days' guaranteed labour for every rural household and MGNREGA-EB 'climate proofs' agricultural infrastructure built by wage labourers under MGNREGA. In that study, we outlined how policymakers in Andhra Pradesh have aligned MGNREGA, a social protection programme, and MGNREGA-EB, a climate change response programme, at the policy design stage. We also highlight how MGNREGA has mainstreamed a number of climate-responsive mechanisms to provide wageseekers with more climate-resilient (CR) wages and assets.

In this second study, we focus on India's Weather-Based Crop Insurance Scheme (WBCIS) – the world's largest crop insurance programme – and MGNREGA in the northwestern state of Rajasthan. We focus on crop insurance since it can play an important role in helping farmers to manage risk in the face of increasing climate uncertainty and act as a safety net when crops fail. We focus on MGNREGA since it is the largest state-led social protection programme in the world, supporting nearly 47 million rural households per year to increase household income and assets (GOI 2016b).

WBCIS and MGNREGA are not aligned: separate ministries and line agencies – the Departments of Agriculture and Rural Development, respectively – implement them at local level. But despite their lack of convergence, the programmes operate in the same geographical areas, and both help rural people smooth their consumption and manage risks in the face of vulnerability, particularly from climate-related shocks and stresses. Given these similarities, the objective of this study is to outline how the two initiatives could be brought together to help households build more durable, long-term pathways out of poverty and climate vulnerability.

Our report is structured as follows. Section 2 outlines the main research questions and introduces the analytical frameworks we use to investigate aligned SP and CC programming. Section 3 provides background on WBCIS and MGNREGA and their implementation in Jhunjhunu district, Rajasthan. In Section 4, we analyse how WBCIS and MGNREGA work to deliver SP and CR outcomes for poor and vulnerable households. We focus on the main contextual factors and mechanisms that shape successful outcomes, drawing on evidence from interviews with farmers, civil society and policymakers in Jhunjhunu. In Section 5 we then discuss the opportunities and limitations of WBCIS and MGNREGA in helping households hang in, step up and step out of poverty and climate vulnerability. We conclude with a discussion on how these two standalone SP and CC interventions could be aligned in a structured, sequential manner to give households new opportunities to hang in, step up and step out.

Analytical approach



2.1 Argument for aligning SP and CC

Social protection and climate change interventions both seek to build the resilience of poor and climate-vulnerable households by strengthening their capacity to absorb and/or transfer risks.

SP policy responses have evolved from safety nets for poor and vulnerable groups in response to shocks. They have expanded to include short-term interventions to reduce the impact of shocks and longer-term mechanisms to combat chronic poverty (Davies *et al.* 2013). SP interventions include cash transfers, conditional cash and asset transfers, public works programmes (PWPs) and social insurance schemes.

CC interventions focus on helping households plan and manage the challenges and opportunities associated with climate change. They can build the resilience of poor and vulnerable households by protecting assets and capabilities and providing sustainable and climate-resilient opportunities for graduation out of poverty.

Despite most countries having comprehensive strategies for both SP and CC, there has been little attempt to align the two. In practice, they remain in separate institutional homes, with separate intra-sector coordination groups and funding channels – limiting the potential to develop synergies for more sustained, durable efforts to reduce social, economic and environmental vulnerability.

Developing policy coherence between social protection and climate change has the potential to help households find sustainable and resilient pathways out of poverty and climate vulnerability. For example, aligning SP and CC responses can provide households with:

- A more holistic and sustainable approach to risk management
- Access to different sources of finance (public and private, domestic and international) for investment in sustainable, climate-resilient poverty eradication strategies
- Access to different financial instruments (such as cash and asset transfers, PWPs, credit and insurance) to build more durable and diversified livelihood strategies, and
- Gender-disaggregated targeting to help women overcome barriers to accessing services.

2.2 Research questions

Although there are strong theoretical arguments for aligning SP and CC policy responses, there is little concrete evidence documenting the approaches to, and benefits of, doing so. This lack of evidence limits policymakers' ability to make informed policy choices, tailor policy responses to the needs of specific groups, use scarce resources effectively and leverage additional investment. This paper aims to address this evidence gap by examining SP and CC responses in India – a country with some of the world's most ambitious and far-reaching SP and CC interventions. Our research focuses on three main questions:

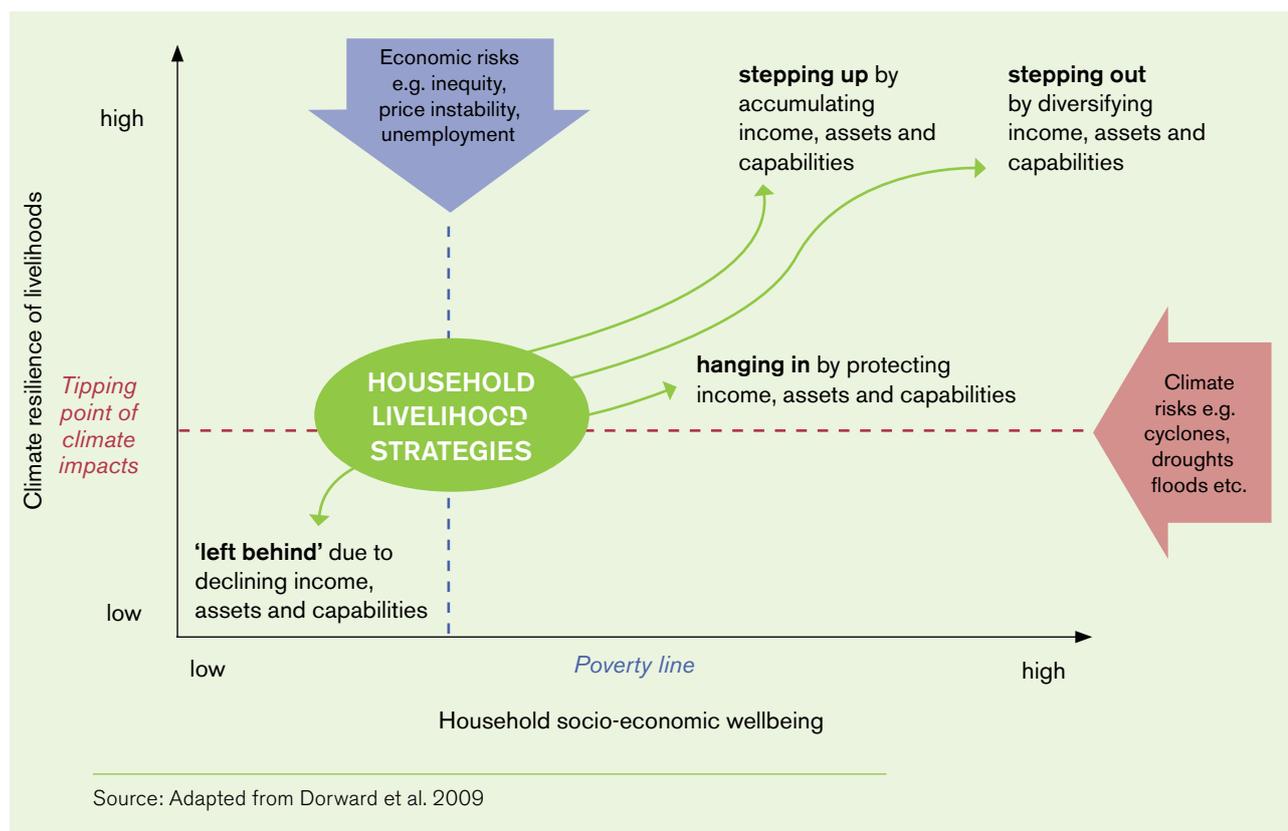
1. Do standalone policy responses deliver outcomes that enable households to hang in, step up and step out of poverty and climate vulnerability?
2. What are the underlying mechanisms and processes that support SP and CR outcomes in standalone policy responses?
3. How could standalone SP and CC policy responses be aligned in practice to provide better opportunities for poor households to hang in, step up and step out of poverty?

2.3 Analytical frameworks

Our main research questions are guided by two analytical frameworks. First, our framing of how SP and CC policy instruments can be used to reduce poverty and climate vulnerability is guided by the hanging-in, stepping-up and stepping-out framework (adapted from Dorward *et al.* 2009), where:

- **Hanging in** means households can protect their income, assets and capabilities in the context of climate and other shocks
- **Stepping up** and **stepping out** means households can improve their income, assets and capabilities, despite climate and other livelihood shocks.

Figure 1: Hanging in, stepping up and stepping out framework



Second, we use the context, mechanisms and outcomes (CMO) framework to understand how WBCIS and MGNREGA deliver SP and CR outcomes, and how they could be better aligned to provide opportunities for households to hang in, step up and step out of poverty and climate vulnerability. We adopt a three-pronged approach to understand:

- **Context:** the policy, institutional, socioeconomic, and climate contexts in which WBCIS and MGNREGA have been designed, which shape whether SP and CR outcomes are achieved
- **Mechanisms:** the underlying processes that achieve SP and CR outcomes
- **Outcomes:** whether standalone SP and CC interventions help women and their households hang in, step up and step out of poverty; and the intermediate outcomes necessary to achieve these overall programme outcomes.

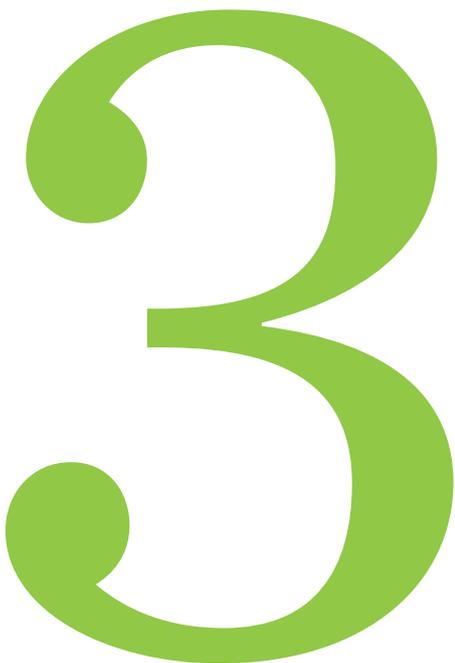
This study seeks to uncover how aligned SP and CC policy responses lead to better outcomes for households, not to quantify the impact of this alignment

at the household level. The discussion of our findings therefore focuses on what we refer to as intermediate outcomes – the steps necessary to achieve long-term reductions in poverty reduction and climate vulnerability – and the mechanisms that underpin their delivery.

2.4 Case study approach

To understand how WBCIS and MGNREGA work to promote social protection and climate resilient outcomes, we used a case study approach that combined a desk-based policy review and a series of semi-structured interviews with policymakers, officials involved in delivering the two schemes, civil society and programme beneficiaries. Our research began with a review of laws and policy documents related to crop insurance and SP programmes in India. We then interviewed 27 stakeholders involved in designing and delivering crop insurance and MGNREGA in Delhi, Mumbai, Jaipur and Jhunjhunu. We concluded our fieldwork with 28 key informant interviews and focus group discussions with farmers and MGNREGA wageseekers.

Background on WBCIS and MGNREGA



India is a pioneer in its political commitment to crop insurance and guaranteed labour. Crop insurance and guaranteed labour have both played central roles in policy responses to drought and weather fluctuations that threaten the livelihoods of the rural poor. WBCIS and MGNREGA both help rural people manage risk and smooth consumption in times of shock. They are the largest schemes of their type in the world, making them ideal case studies for examining how SP and CC programmes could converge to reduce poverty and build resilient livelihoods.

3.1 History of crop insurance in India

The first attempt to implement crop insurance in India began in the early 1970s, with pilot schemes in Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka and West Bengal insuring farmers for cotton, groundnut, wheat, potato and gram crops. These early experiments assessed crop-related losses at the farm level, which proved a costly and inefficient system to administer on a broader scale.

In 1979 the General Insurance Corporation of India launched a revised insurance programme – the Pilot Crop Insurance Scheme (PCIS) – in 13 states. The PCIS was a voluntary scheme available only to farmers taking out agricultural loans. It used an ‘area-based approach’ instead of an individual approach to assess crop losses.

Under an area-based approach (also known as yield-based approach), a specific geographic area (eg a Gram Panchayat, block or district) is designated as an insurance unit (IU), with all insured farmers in the IU paying the same premiums per hectare of a specific crop. Historical data is collected for the average annual yields of crops within the IU. Each year, crop-cutting experiments (CCEs) are undertaken by *patwaris* – local level revenue officers – on specific farms within the IU to estimate the average yields of different crops. This data is then compared against historical crop production data from the IU. Where CCE estimates are below these historical yields, all insured farmers in the IU are entitled to the same rate of payout regardless of their on-farm loss (Verma and Mahul 2012).

Building on the PCIS, in 1985 the government of India launched the first national crop insurance scheme that was compulsory for all farmers taking agricultural loans. The Comprehensive Crop Insurance Scheme (CCIS) covered farmers growing cereals, millets, pulses and

oilseeds. Like its predecessor, the CCIS also used an area-based approach to trigger insurance payments. The cost of claims was shared by central and state governments out of their annual budgets on a 2:1 ratio, and premiums for small and marginal farmers were also subsidised by 50 per cent, split equally between national and state governments (Da Costa 2013). The CCIS covered 76.3 million farmers, but ultimately was not financially sustainable for the public sector since governments paid more than 23 billion rupees in claims compared to 4 billion rupees in premiums paid by farmers (Suresh 2015).

In recent decades, political commitment to crop insurance in India has remained strong due to recurrent drought, persistent rural poverty and high farmer suicide rates which have captured national headlines. Following a period of liberalisation in the 1990s, the insurance sector was re-opened to private companies. The government of India has subsequently moved away from insurance schemes where claims are subsidised by government, to those where farmers’ premiums are subsidised by government and responsibility for claims payment (and the associated risk burden) has been transferred to the private sector (Fisher and Surminski 2012).

At the time of our fieldwork, three main insurance schemes were operating in India: the National Agricultural Insurance Scheme (NAIS), the modified NAIS (mNAIS) and WBCIS. NAIS was introduced in 1999 and follows the CCIS in using an area-based approach and subsidised claims, with the cost shared equally between central and state governments. Due to the high burden the claims placed on government finances, a modified version of the scheme was introduced in 2010 which continued to use an area-based approach, but with subsidised premiums instead of claims. WBCIS was first piloted in 2003 by the private insurance company ICICI Lombard, and became a national scheme in 2007. Unlike NAIS and mNAIS which use a yield-based area approach, WBCIS estimates losses by measuring local weather parameters – for instance rainfall, humidity, wind speed, temperature – and comparing them against historical trends. Data is captured by automated weather stations in each IU and sent to insurance companies. When a pre-determined threshold has been passed, all farmers in the IU are eligible for insurance payouts and receive these as direct transfers into their bank accounts. Each crop has different thresholds. The claim amount for a specific crop will also depend on the severity of the impact beyond the threshold.

Table 1: Crop insurance approaches

INSURANCE APPROACH	INSURANCE UNIT	DATA COLLECTION	ADVANTAGES	DISADVANTAGES	SCHEME
Individual approach	Individual farm	Inspection of impacts on yields at farm level	Accurate assessment of crop loss	Expensive to administer; lack of historical baseline data; excludes those without land title	Pilots in Gujarat and Maharashtra in 1970s
Area-based / yield-based approach	Gram Panchayat, block or tehsil	Crop-cutting experiments measured against historical yields	Less expensive to administer than individual approach	Slow claims payment; measurements differ to on-farm loss (basis risk); perception of elite manipulation; lack of transparency	CCIS, NAIS, mNAIS
Weather index approach	Gram Panchayat, block or tehsil	Automated weather stations measure weather parameters against historical thresholds	Quick claims payments; weather data can be independently verified; responsive to changing climate; less expensive to administer	Measurements differ to on-farm loss (basis risk); lack of local automated weather stations; lack of historical baseline data; non-climate risks not covered (eg pests)	WBCIS

Source: Singh 2010; Verma and Mahul 2012; Da Costa 2013

In January 2016 the government of India announced a re-organisation of the crop insurance market in India, replacing NAIS and mNAIS with the new Pradhan Mantri Fasal Bima Yojana (PMFBY) – the Prime Minister’s Crop Insurance Scheme. Like its predecessors, it will use an area-based approach to assess crop loss, but verified with smartphones or satellite data to ensure greater levels of accuracy and transparency. For the first time, the PMFBY will also cover post-harvest losses and localised calamities such as hailstorms, landslides and flooding. The PMFBY has capped farmer premiums at lower rates than previous schemes and aims to increase the claim amount farmers will receive in the event of crop loss (GOI 2016c). Table 2 outlines the main features of India’s different crop insurance schemes over the past two decades.

Under the rules that govern crop insurance in India, only one scheme is available in a specific district each season. From April 2016 each district will therefore choose between the PMFBY or WBCIS after consultations held at state and district levels. To bid for these contracts, insurance companies need to submit evidence of their financial strength, infrastructure, solvency margin, business plan, marketing channels, human resources and strategies for coverage (GOI 2014a). Competitive bidding allows district and state authorities to select the most effective and cost-efficient insurance providers, and to switch schemes if necessary. In Jhunjhunu for example, NAIS was the main crop insurance scheme prior to 2010, WBCIS was implemented between 2010 and 2012, mNAIS was used between 2012 and 2015 and WBCIS was reinstated in 2015.

Table 2. Comparison of India's crop insurance schemes, 1999–2016

SCHEME DETAILS	NAIS (1999–2016)	MNAIS (2010–2016)	WBCIS (2007–PRESENT)	PMFBY (STARTED IN 2016)
Geographic unit of insurance	Block or lower level	Gram Panchayat	Area covered by automated weather stations (usually block)	Gram Panchayat, block, mandal
Parameters for calculating claims	Area yields compared to historical average	Area yields compared to historical average	Weather-based parameters (rainfall, temperature, humidity, wind velocity) compared to historical yields	Area yields compared to historical average Individual farm sampling for localised calamities
Data collection method	Randomised crop-cutting experiments	Randomised crop-cutting experiments	Automatic weather stations	Randomised crop-cutting experiments. Validated using smartphones (geo-coding, date stamping and photographic evidence) Individual assessments for localised calamities
Claim settlement time	6 to 24 months	About 6 months	45 days from end of insurance period (season)	51 days from end of harvest 30 days for localised calamities (landslides, hailstorms, inundation)
Premium	Fixed and non-actuarial (1.5 to 3.5%)	Actuarial. GOI subsidises maximum 75% of premium. Average estimated farmer premium 5.1%	Actuarial. 2.5 to 3.5% in <i>kharif</i> and 1.5 to 2% in <i>rabi</i> depending on crop being cultivated	Actuarial. Farmer premiums capped at 2% in <i>kharif</i> , 1.5% in <i>rabi</i> and 5% for commercial horticulture
Subsidy type	Claim, 10% of premium	Premium	Premium	Premium

Source: Singh 2010; Clarke *et al.* 2012; Verma and Mahul 2012; GOI 2016c

3.2 WBCIS

WBCIS is a crop insurance programme that allows farmers to claim payments for climate-related crop losses. Based on locally measured climate impacts, these payments aim to help farmers recover lost input costs when crops fail. WBCIS was introduced in 2003 and now covers 45 per cent of India's crop insurance market – making it the country's largest crop insurance scheme (ICICI Lombard 2016). It uses locally-measured weather data and compares this against historical weather data to estimate when crop loss occurs (see Box 1). WBCIS is provided by both private and public companies to farmers. Like mNAIS, the government of

India subsidises WBCIS premiums instead of claims – meaning farmers pay lower up-front costs for insurance and claims payments are made by companies rather than from government budgets. The automated scheme means farmers receive their compensation more quickly than a typical six-month waiting period under NAIS and mNAIS.

Since the introduction of the CCIS in 1985, insurance has been obligatory for farmers taking out agricultural loans in India. The main ways for farmers to access loans in Rajasthan (and therefore benefit from WBCIS) is either through Kisan credit cards (KCC) or Gram Sewa Sahkari Samiti (GSSS) groups. KCCs are offered by rural banks and provide low-interest credit to farmers.

BOX 1: WBCIS FACTSHEET

- WBCIS is the world's largest weather-based insurance scheme. WBCIS was piloted in 2003 by ICICI Lombard and implemented as a government scheme in 2007.
- Public and private insurance companies apply to implement WBCIS in a competitive tendering process at state and district levels. Only one type of insurance scheme (eg either WBCIS or mNAIS) is available in an individual district.
- Farmers taking out agricultural loans are automatically insured under the scheme. Premiums are deducted from their loans and claims paid into their accounts with rural banks and/or cooperatives.
- WBCIS premiums are between 8 and 12 per cent of the sum insured. National and state governments subsidise premiums, so that farmers pay between 1.5 and 3.5 per cent.
- Farmers are insured for the total area of land they are cultivating. Maximum claims are equivalent to the average costs of cultivation (input costs) per hectare.
- WBCIS uses weather-based parameters – rainfall, humidity, wind velocity, temperature, fog and frost – and their correlation to historical yields to trigger claim payouts. Data is collected by automated weather stations at the sub-district level.
- Insurance companies receive data from automatic weather stations. When a threshold for a specific crop and parameter is passed, a claim is triggered.
- Claims arrive in farmers' bank accounts 45 days from the end of the insurance period (end of farming season).
- Insurance companies operating WBCIS are reinsured on international markets.

GSSS groups are cooperative societies that provide loans to their members at reduced interest. Non-loanees can also sign up to WBCIS if they wish, but a lack of collateral (eg land titles) and limited capacity within rural financial institutions to extend services in rural areas mean that the majority of farmers with insurance are loanees.

3.3 MGNREGA

MGNREGA is India's largest social protection programme. It provides 100 days of guaranteed labour for every rural household in India that demands access to work, paying wageseekers to construct rural infrastructure that supports local livelihoods. In 2015-16 MGNREGA provided nearly 47 million households (70 million individuals) with employment opportunities (GOI 2016b). MGNREGA provides important support to women, minorities and people with disabilities – offering equal wages and special workplace provisions (eg childcare facilities, reduced workloads) to break down barriers that keep these groups economically and socially marginalised. Wageseekers construct infrastructure that can support local livelihoods – including water conservation and harvesting infrastructure, irrigation canals, tree plantations and flood control infrastructure (see Box 3). In some cases MGNREGA labour can also be used for the construction of private assets for households belonging to specific vulnerable groups.

MGNREGA has no stated aim to develop climate resilient livelihoods or assets. But the fact that it provides wages and assets to millions of rural people, most of whose livelihoods rely on climate-sensitive sectors, means that the programme has some inherent characteristics that respond to climate change vulnerability. Several studies have explored how MGNREGA can help communities build resilience to climate change by developing durable infrastructure, increasing household wages during climate shocks and strengthening communal assets (Tiwari et al. 2011; Adam 2015; Steinbach et al. 2016).

Despite its acclaim as one of the world's leading SP programmes, there is a high variation, both within and across states, on the quality and durability of assets that have been constructed under MGNREGA (Mishra 2011; Carswell and De Neve 2013; Chopra 2015). Uneven implementation across states has also resulted in mixed outcomes for women (Kelkar 2011). In Tamil Nadu, for example, the programme has had positive outcomes for Dalit women (Carswell and Neve 2014), but in Madhya Pradesh the programme has not adequately countered cultural models of gender that exclude women from socioeconomic participation (Holmes and Jones 2011).

BOX 2: MGNREGA FACTSHEET

- The Mahatma Gandhi National Rural Guarantee Act (MGNREGA) is a law, promulgated in 2005, that guarantees 100 days of work to every household in rural India that demands it.
- It is the state's response to the decline of agriculture in rural areas, acting as a social safety net that provides cash to India's rural poor.
- The Mahatma Gandhi National Rural Guarantee Scheme (MGNREGS) – the programme associated with the act – is the world's largest labour guarantee scheme.
- Workers earn a guaranteed wage, which is equal for men and women.
- It uses the labour generated through the scheme to produce public assets that support rural livelihoods, such as water tanks, irrigation facilities and tree plantations.
- MGNREGS also incorporates a number of capacity building projects to enhance participation in the programme and build the skills of beneficiaries.
- The act also supports private asset production for households belonging to specific vulnerable groups.

BOX 3: PRIORITY MGNREGA WORKS

- Water conservation and water harvesting
- Drought-proofing, including afforestation and tree plantation
- Irrigation canals, including micro and minor irrigation works
- Providing irrigation facilities to land owned by scheduled castes and scheduled tribes, land reform beneficiaries or beneficiaries of the Indira Awas Yojana social welfare programme
- Renovating traditional water bodies, including desilting of tanks
- Land development
- Flood control and protection works, including drainage in water logged areas
- Rural connectivity to provide all-weather access
- Any other work, which may be notified by central government in consultation with the state government.

Analysis

4

In this section, we investigate the underlying mechanisms and contextual factors that shape how WBCIS and MGNREGA deliver SP and CR outcomes. For each of these standalone programmes, we outline the main intermediate outcomes necessary to achieve SP and CR benefits for rural households, the mechanisms and processes that underpin these outcomes, and the context that has shaped both the design of the programmes and their ability to achieve outcomes in Jhunjhunu. We use this analysis in Section 5 to highlight trends across both interventions and identify entry points for policy alignment.

4.1 WBCIS

4.1.1 Outcomes

WBCIS is a crop insurance programme that provides farmers with payments to cover climate-related crop losses based on locally-measured climate impacts. These payments are intended to help farmers recover lost input costs and smooth their consumption gaps in times of crop failure. To fulfil its primary function as a safety net for farmers, WBCIS must deliver five intermediate outcomes:

- Transfer burden of claims process from government onto the private sector
- Incentivise private sector insurers to participate in the scheme
- Ensure that insurance is accessible
- Ensure that payments are adequate, accurate and predictable
- Ensure that households receive payments in a timely manner to help them respond to climate-related losses.

4.1.2 Mechanisms

WBCIS uses several mechanisms to provide farmers with crop insurance so they can manage the risks associated with climate-related shocks.

Financial incentives for the private sector: Private sector insurance companies benefit from a number of financial incentives to offer crop insurance to farmers. These include direct transfers from national and state governments to subsidise the premiums that farmers pay (which are set at actuarial rates), huge market access if they win state or district insurance contracts and the financial security of reinsurance companies covering their liabilities.

Mandatory purchase of insurance for loanee farmers: WBCIS is obligatory for farmers taking out agricultural loans, which means insurance companies have a guaranteed market for their products. In theory,

mandatory insurance also means that loanee farmers are compensated for any climate-related losses they experience and that banks are protected from non-repayment of loans.

Subsidies for premiums: To ensure that crop insurance is accessible to farmers, national and state governments subsidise 60–75 per cent of the premiums, depending on the crop and the amount of cultivated land being insured (Greatrex *et al.* 2015). Market-rate premiums are 8–12 per cent of the average input costs per hectare, but at the subsidised rate, farmers pay a maximum of 3.5 per cent in *kharif* and 2 per cent in *rabi*. These premiums are deducted directly from agricultural loans taken by KCC and GSSS members.

Tailored insurance products for each district: The insurance products available to farmers are tailored to districts based on historic weather data, local input prices and the main crops grown. Actuaries at insurance companies use this data to calculate specific thresholds that must be passed to trigger an insurance payout. Average input costs – for fertiliser, seeds, water, etc. – per hectare of a specific crop are also tailored to individual districts. The total amount insured for each farmer is the average input cost multiplied by the total area under cultivation.

Weather-based index: WBCIS's defining feature is that it uses a weather-based index, rather than a yield-based index. NAIS and mNAIS base claims on crop-cutting experiments, which have been associated with long delays in payouts and been criticised for being open to manipulation and error. WBCIS relies on a fully-automated system that uses thresholds of key parameters – rainfall, temperature, unusual humidity, wind speed and fog – and their correlations with historical yield data to determine when payouts should be made. Using automation removes the need for crop cutting experiments and means that claims can be paid by direct electronic transfer to farmers' bank accounts. Regulations state that payments must be made no more than 45 days after the end of the insurance period. This is substantially quicker than the six-month wait farmers experience under NAIS and mNAIS.

4.1.3 Context

India has a long history of experimenting with different crop insurance schemes. Political support for these initiatives remains strong due to the prevalence of drought in many states, the importance of poverty reduction to rural voters and high rates of farmer suicide that have captured national headlines. Rajasthan is a leading state for yield and weather-based insurance provision, extending coverage to nearly 50 per cent of farmers, higher than the national average of 23 per cent (Nair 2010; GOI 2016a).

Table 1: Context, mechanisms and outcomes analysis of WBCIS

PRIMARY OUTCOME	INTERMEDIATE OUTCOME	MECHANISM	CONTEXT
Farmers receive payments for crop loss associated with climate-related impacts	Government of India transfers risk burden to the private sector	Subsidised premiums instead of subsidised claims	Desire to make government budgeting more predictable by shifting risk onto private companies
	Insurance companies are incentivised to participate in WBCIS	Government subsidies to insurance sector Competitive tender between public and private companies Actuarial premiums allow insurance to be re-insurable on international markets	Legislation requires insurance companies to provide insurance in rural areas Reduced administration costs to administer weather indexes compared to CCEs International markets cover risk for liabilities
	Households can access insurance	Mandatory insurance purchase for farmers taking agricultural loans Subsidised insurance premiums for farmers Insurance products designed for specific districts based on local context (eg climate indicators, crops selection)	High levels of rural poverty and associated rise of farmer suicides led to increased levels of government support Government regulatory policies encourage financial inclusion in rural areas Access to financial services through KCC or GSS Unequal access to loans (eg only accessible to those with land titles)
	Households receive accurate, predictable and adequate payments that correlate to on-farm losses when shocks occur	Weather-based index uses automated weather stations to detect when a threshold is passed Farmers insured for the cost of cultivating a specific crop per hectare	Wish to reduce basis risk, after farm-level losses not correlated to average yields under mNAIS Perception that crop-cutting experiments used under NAIS and mNAIS are subject to manipulation and error Localised climate-related vulnerability Farmers' lack of understanding of insurance products and the claim process Farmers' lack of access to weather station data
Households receive timely insurance payments when shocks occur	Automated payments send claims directly to farmers' bank accounts with 45 days of the end of insurance period		Aim to improve on the six-month waiting period for payments under mNAIS

WBCIS financing has been shaped by the government's desire to shift away from the unpredictable subsidisation of claims payments in times of shock to a support package that can be allocated predictably in the national budget. The government began to subsidise premiums rather than claims in 2003 with the WBCIS pilot, shifting the financial risk onto insurance providers who received financial incentives to provide crop insurance to farmers. All subsequent crop insurance schemes in India have used subsidised payments instead of claims. The role of the private sector has been important in launching WBCIS. Insurance companies in India are legally bound to provide insurance in rural areas under the country's Insurance Act. WBCIS began as a pilot project run by the private insurance company ICICI Lombard.

The design of WBCIS was influenced by previous yield-based schemes' perceived failure to adequately compensate farmers for crop losses. The development of mechanisms such as the weather index, automated payments and tailored insurance products is a response to the challenges that plagued NAIS and mNAIS. These included basis risk (where crop-cutting experiments did not reflect on-farm losses experienced by farmers), the scope for corruption in farmer yield assessments and six-month wait periods for claims to be processed.

But several contextual factors restrict WBCIS's ability to protect household income in times of climate-related shocks. Climate impacts are highly localised, so with WBCIS there is often significant variation between weather measurements at the nearest weather station and those at the farm where crop loss has occurred. Coupled with a lack of access to data from local weather stations and low levels of understanding among farmers on how and when insurance claims are triggered, farmers struggle to predict how much they will receive in compensation, if anything.

The link between crop insurance and agricultural loans is another constraint on WBCIS's ability to achieve its overall objective of providing a safety net for farmers in the event of weather-related losses. Many farmers access credit through KCC or GSSS, but poor and marginalised groups find it hard to gain access to loans. For example, despite the fact that non-loanees can also voluntarily purchase crop insurance, many of these individuals – who include tenant farmers, the landless poor, family members of a deceased title holder and women – do not have land titles and can therefore not access loans or the insurance that comes with them. Due to resource constraints in rural banks and cooperatives, many financial institutions lack the capacity and incentives to extend insurance to *non-loanees*.

4.2 MGNREGA

MGNREGA's main objective is to reduce rural poverty by providing a legal guarantee of 100 days' paid labour a year to every household in India and building community assets that support local livelihoods. MGNREGA provides wages to millions of people in rural areas. For many of these, climate-sensitive sectors such as agriculture are the main component of their livelihoods. So, despite not having an explicit mandate on climate change, MGNREGA has integrated a number of climate-responsive measures that help build the resilience of households who are vulnerable to the impacts of climate change.

In this section, we use the CMO framework to outline MGNREGA's main intermediate outcomes, the mechanisms that deliver them and the contextual factors that shape the design of MGNREGA and its ability to deliver SP and CR outcomes in Rajasthan. For this analysis, we draw heavily on our first MGNREGA case study in Andhra Pradesh (Steinbach *et al.* 2016).

4.2.1 Outcomes

MGNREGA aims to reduce rural poverty by providing households with additional income and assets that support their livelihoods. To achieve this outcome, the programme needs to deliver a number of intermediate outcomes.

To provide households with additional income MGNREGA must provide:

- Guaranteed access to wages
- Predictable, transparent and timely wage payments
- Inclusive access to wages for women and vulnerable groups
- Wages that are responsive to changing climate contexts.

To provide assets that support rural livelihoods, MGNREGA projects must be:

- Designed and selected based on the needs of rural households and communities
- Durable
- Responsive to changing climate contexts.

4.2.2 Mechanisms

Wages

A number of mechanisms help deliver guaranteed, predictable, transparent, timely, gender-inclusive and climate-responsive wage payments.

Legal and regulatory mechanisms provide households with guaranteed, predictable and timely wages. Each household in rural India is entitled to 100 days paid labour, and can spread the days out over the year to suit their livelihood strategies, seasonal expenditure variation or in response to shocks. MGNREGA provides a legal guarantee of timely wage payments, with compensation for late payment. Wages are calculated based on the consumer commodity index, making them sensitive to differentiated living costs across India based on varied socioeconomic and climate conditions. For 2015–2016, for example, the wage rate ranged between 251 rupees a day in the wealthy state of Haryana to 159 rupees a day in the poorer states of Madhya Pradesh and Chhattisgarh. In Rajasthan, the maximum wage rate is 173 rupees a day, reflecting the costs of key commodities in the state (GOI 2015b). Interviewees in Jhunjhunu were being paid 115 rupees a day.

MGNREGA also has legal mechanisms to support the economic participation of women. It states that at least one-third of beneficiaries should be women and guarantees equal pay for men and women. Work-site procedures that benefit women include a legal guarantee of local work, with extra cash payments for wageseekers who have to travel more than five kilometres from home and on-site childcare facilities.

New technology is improving the transparency and timeliness of payments under MGNREGA. Digitised financial procedures have improved the administration of the scheme, minimising opportunities for any kind of leakage. A database logs the details of who works where and for how many hours – and automatically calculates payments. Wageseekers in Rajasthan also increasingly have access to bank accounts (though compared to wageseekers we interviewed in Andhra Pradesh, access to financial services was much lower in Rajasthan); those who do can receive payments directly to their accounts.

Finally, several mechanisms ensure that labour guarantees respond to climate impacts. As a demand-driven programme, rural households can flexibly access MGNREGA to mitigate losses during periods of income insecurity or climate vulnerability – for example, during the non-farming season or during periods of drought in the farming season. In the event of climate shocks, states can promulgate legal documents known as ‘circulars’, which allow households to increase the

number of days they participate in the scheme. Wages are calculated using a sliding seasonal pay scale and are recalculated every year to reflect changes in commodity prices resulting from climate-sensitive crop yields.

Assets

MGNREGA has several mechanisms to ensure that assets created under the programme are durable over time and responsive to both wageseekers’ livelihood needs and current and future climate change.

Regulations determine what types of asset can be built under the programme (see Box 3). Prioritised projects aim to remove constraints to increased agricultural output – particularly water availability. State governments use circulars to add to the list of legally permissible assets as changing livelihood contexts and changing climate conditions demand. In 2013, for example, a circular added compost and bio digesters to the list of permissible works, to enrich soil in drought prone areas (GOI 2013).

MGNREGA also tries to facilitate bottom-up processes to select and design the assets built under the programme so these respond to local livelihood needs. At community level, a participatory meeting known as a Gram Sabha is held to decide which works will be carried out locally. But according to respondents in Alsisar and Chirawa, MGNREGA assets are predetermined as ponds or non-permanent pathways, and communities do not have a voice in selecting them.

To ensure that assets are durable, MGNREGA technical assistants are required to design and construct infrastructure according to standard specifications. A team of social auditors visits projects every six months to verify compliance and assess the technical design of MGNREGA assets. In addition, the government has announced plans to bolster the technical capacity of programme functionaries by training ‘barefoot engineers’ in civil engineering to monitor the construction of projects at the local level (GOI 2015a).

4.2.3 Context

Several factors have shaped MGNREGA’s design and ability to deliver climate-resilient outcomes. The policy drive for a universal, rights-based scheme to improve livelihoods for the rural poor – 31 per cent of whom live below the poverty line – was part of the original political and socioeconomic context that shaped its design (GOI 2014b). It has also been shaped by rural India’s pervasive gender inequality, where only 18.6 per cent of rural women have access to wage employment outside of the agricultural sector (ADB 2013).

Table 2: Context, mechanisms and outcomes analysis of MGNREGA

PRIMARY OUTCOME	INTERMEDIATE OUTCOME	MECHANISM	CONTEXT
MGNREGA wages lead to increase in household income	Households have guaranteed access to wages	Legal right to 100 days' work Legal structure that facilitates spatial and temporal variations in wages	Unequal growth and rural poverty rates Strong political support at national level for rights-based scheme Strong civil society mobilisation at state level in Rajasthan Breakdown in relationship between state and civil society led to reversals in overall access to the scheme
	Wages are delivered in a predictable, transparent and timely manner	Formal procedures for calculating and processing wages Formal contract between wageseekers and the state	Political support for promoting financial inclusion Potential for transaction costs in processing payments
	Women and other vulnerable groups participate in economic activity	Legal provisions for equal wages Worksite procedures (eg childcare, proximity to home) to support women's inclusion	Cultural constraints to women accessing equal wages Limited political commitment to implementing worksite regulations
	Labour guarantees respond to changing climate context	Circulars or amendments to increase work days in response to shocks in drought-prone districts	Linkages between climate change and agriculture, particularly drought in Rajasthan
MGNREGA assets improve household livelihoods	Assets responsive to rural household and community needs	Regulation to ensure that all assets support livelihoods Demand-led regulatory structure enables wageseekers to identify assets.	Linkages between climate change, livelihoods and assets Differentiated infrastructure needs across communities
	Durable assets are created under MGNREGA	Standard specifications for assets	Low commitment to durable assets in communities visited in Jhunjhunu district
	Asset selection is responsive to changing climate context	Circulars add to list of permissible assets in response to climate change	Increasing climate impacts in Rajasthan, particularly drought Need for irrigation and water harvesting due to declining and variable rainfall

Rajasthan was a pioneering state in MGNREGA implementation, with the highest number of paid MGNREGA days of all Indian states in 2008–09. Its vibrant civil society and regular exposure to drought led to early uptake of MGNREGA by rural wageseekers. But the number of paid days and funds used for MGNREGA have fallen in recent years, due to a number of factors including capacity constraints, a number of corruption scandals and declining political support for the scheme (Chopra 2014). In Jhunjhunu these findings were echoed by many farmers, who claimed that they could not regularly access work under MGNREGA, durable assets were not being created and *sarpanches* (village leaders) were using the scheme to bolster patronage networks.

Linkages between local livelihoods and the natural environment also help contextualise the impact of MGNREGA on local livelihoods. Annual rainfall in Rajasthan is half the national average and the state is

highly prone to droughts. At the same time, half the population relies on agriculture as their main source of income. In Jhunjhunu demand for MGNREGA varies depending on access to water and irrigation facilities. In Chirawa there is less demand for MGNREGA since there is greater access to irrigation, while there is higher demand in Alsisar for households without access to irrigation for their crops. There is also a differing demand for MGNREGA depending on the level of household income and access to alternative livelihood sources – with richer households having better access to financial services, jobs in the service sector and remittances, and poorer households relying more heavily on wage labour and MGNREGA for opportunities to supplement household income. Overall, MGNREGA plays an important safety net function for households without access to irrigation, wage labour on larger farms or off-farm jobs in the service sector.

Discussion of findings

5

In this section we discuss the main findings of our research on WBCIS and MGNREGA. We begin by summarising the main mechanisms that the two initiatives use in their attempt to deliver SP and CR outcomes. We then discuss whether WBCIS and MGNREGA can help households hang in, step up and step out of poverty and climate vulnerability. Based on our field research in Jhunjhunu we show that due to the nature of its design, WBCIS does not provide an adequate safety net for households to hang in during climate shocks, nor does it provide the assurance to farmers that would encourage risk-taking behaviour that could help them step up and out. Evidence from Jhunjhunu does show, however, that MGNREGA is helping poor households hang in and meet their household needs during the non-farming season. But due to a number of contextual factors – low level of political commitment and low capacity to build durable assets – MGNREGA is not currently helping households in Jhunjhunu step up and out of poverty and climate vulnerability.

We conclude this section with a discussion on how these two standalone interventions could be aligned to provide more durable approaches to reducing poverty and building climate resilient livelihoods. We identify the potential for MGNREGA and WBCIS to be aligned using a sequential, layered approach where poor households transition from the former into the latter over time. But we caution that each programme needs to improve its existing design features before such an approach will be viable.

5.1 Mechanisms used to deliver SP and CR outcomes

5.1.1 WBCIS

WBCIS provides farmers with insurance payments to cover climate-related crop losses based on locally measured climate impacts. WBCIS attempts to achieve the following intermediate outcomes: transfer risk burden of payments onto the private sector, incentivise private sector insurers to participate in the scheme, ensure that insurance is accessible to farmers and provide adequate, accurate, predictable and timely payments to help farmers respond to climate-related losses. Insurance delivery under WBCIS is characterised by four mechanisms:

1. **Financial incentives:** these ensure that both private sector insurers and farmers are willing to participate in WBCIS. Insurance companies benefit from government subsidies and the financial security provided by international reinsurers. National and state governments heavily subsidise farmers' premiums.

2. **Insurance linked to agricultural loans:** WBCIS is obligatory for farmers taking out agricultural loans, guaranteeing high levels of uptake in rural areas. Insurance companies are legally bound to provide insurance to people living in rural India.
3. **Tailored insurance:** products are designed for each district based on historic weather data, local input prices and the main crops grown locally. Insurers use this data to calculate specific thresholds that must be passed to trigger an insurance payout.
4. **Weather-based index:** WBCIS uses automated systems to measure key weather parameters (rainfall, temperature, humidity, wind velocity and fog) and compares these to historical data to determine when payouts should be made. Once triggered, payments are transferred directly to farmers' bank accounts after a maximum of 45 days.

5.1.2 MGNREGA

To achieve its social protection objectives, MGNREGA must provide guaranteed, predictable, timely, transparent and inclusive wages, durable assets that respond to livelihood needs and wages and assets that respond to changing climate contexts. Our analysis suggests that four important mechanisms underpin these outcomes.

1. **Legal instruments:** guarantee labour to households, formal contracts for wageseekers and equal wage provisions for women. Circulars provide climate-responsive measures, such as additional labour guarantees during climate shocks, to reduce climate vulnerability.
2. **The MGNREGA regulatory system:** sets standard procedures for wage payments, specifications for assets produced and seasonal and regional variations in daily wage rates.
3. **New technology:** such as digitised payment procedures reduces opportunities for corruption or manipulation.
4. **Financial services:** such as increasing access to bank accounts, is important to ensure predictable, transparent and timely wage payments to MGNREGA wageseekers.

5.2 Hanging in, stepping up and stepping out

WBCIS and MGNREGA both provide safety nets to rural households during times of shock. They have been designed with a number of mechanisms that attempt to deliver both SP and CR outcomes. But evidence from Jhunjhunu suggests that these two standalone interventions are currently not achieving their full potential to help rural households hang in, step up and step out of poverty and climate vulnerability. Below we analyse the gaps in each programme's ability to promote hanging in, stepping up and stepping out.

5.2.1 WBCIS

In Jhunjhunu, different groups have different levels of access to WBCIS or other crop insurance schemes. Richer farmers with land titles, more cultivated land and better access to financial services also have better access to agricultural loans and the insurance products that come with them. Poorer segments of the population – including smallholders and tenant farmers – face greater challenges in accessing loans and benefitting from insurance. This inequality is also highly gendered. Since men tend to take decisions over loans (even when their wife is registered under the GSSS), women are less likely to know about insurance and understand how it can support their livelihoods. Based on these structural barriers to accessing loans, WBCIS only helps protect the incomes and assets of wealthier or better connected farmers. Poorer households must find alternative means to help them hang in during climate-related shocks.

Even for those who can access insurance, there are limits to the extent to which WBCIS can help them hang in when climate impacts occur. For insurance to be an effective safety net during a climate shock, farmers need to receive adequate, accurate, predictable and timely claims. But the farmers we spoke to with KCC and GSSS accounts in Jhunjhunu highlighted a number of constraints that meant WBCIS did not adequately help them hang in during shocks:

1. The total amount insured under WBCIS corresponds to an estimate of the average input costs per hectare in the district, not to predicted loss of income from the cultivated area. Even in the best case scenario – where a farmer receives a full claim for climate-related

crop losses that cover all input costs – their crop would have failed, leaving them with no income. The farmer would therefore need other support, such as wage labour, government support or remittances, to hang in.

2. WBCIS claims are not commensurate with farmers' actual losses. Basis risk is prevalent in WBCIS, due to a range of factors – such as the highly localised nature of climate impacts and differences in farms' soil type, geographical location, farming practices and irrigation facilities (GIZ 2013).¹ Weather stations are too dispersed to capture the variability between farms, so claims are not always equivalent to the losses that farmers experience.
3. WBCIS is perceived to lack transparency. Because the data insurance companies use comes from automated weather stations, there is little risk of human error and/or manipulation. But farmers in Jhunjhunu have little awareness of how insurance products are designed, when local weather station thresholds trigger claims, the extent of climate impacts measured in a given season and the corresponding value of claims payments that households can predict (Agricultural Finance Corporation 2011).² Although insurance companies publish this data online, farmers do not have internet access and cannot predict the value of claims they will receive in a way that helps them develop coping strategies to hang in during shocks.
4. Where claims are received within WBCIS's specified timeframe, farmers do not receive payment until the end of the agricultural season – meaning farmers have already had to develop other seasonal coping strategies to hang in, and therefore use these delayed payments to repay interest on agricultural loans from the beginning of the season.

Due to WBCIS's inability to provide adequate, accurate, transparent and timely payments, the farmers we interviewed in Jhunjhunu could not divert their claims payments to alternative livelihood activities that would allow them to step up by accumulating income, assets or capabilities. Further, with insurance claims based on average input costs, WBCIS does not encourage these farmers to take risks by investing in more expensive, drought-resistant seeds or irrigation facilities because the higher input costs would not be covered under any future claim in the event of crop loss. The lack of incentives to promote risk-taking behaviour is further

¹ Although basis risk can also occur with yield-based schemes that use an area-based approach (eg Singh and Singh 2013), it is likely to be higher in weather-based schemes. This is due to the added complexity of correlating weather parameters measured at an automated station far from farmers' fields to assumed crop loss within an IU with high local variability.

² These findings are consistent with Ceballos *et al.* (2015), who found that 40 per cent of insurance purchasers of a product in Madhya Pradesh have no trust in the company selling the product. Intensive efforts to raise farmer awareness did not improve this, although being in close proximity to a weather station did.

evidence that WBCIS is not helping farmers step up or out of poverty and climate vulnerability in Jhunjhunu.

5.2.2 MGNREGA

In contrast to WBCIS, MGNREGA is used predominantly by poor farmers and the landless, with many households using the maximum 100 days' guaranteed labour a year. In both Alsisar and Chirawa, MGNREGA was mostly used by women in land-poor families, whose husbands attempted to find work as wage labourers in agriculture or construction. In Chirawa, MGNREGA users were mostly older people with no access to other forms of work.

Evidence from focus group discussions and interviews with a selection of programme beneficiaries suggests that MGNREGA can achieve its core social protection aim: protecting household income and assets to allow rural household to hang in. And because MGNREGA has mainstreamed climate-responsive mechanisms such as legal circulars that respond to shocks, wageseeking households are better equipped to hang in despite increasing climate vulnerability.

Interviewees in Jhunjhunu told us that MGNREGA delivers guaranteed, predictable, transparent and timely wage payments to poor households. But wage rates in the district – about 115–130 rupees a day – are quite low compared to Rajasthan's daily maximum of 173 rupees. As a result, wageseekers use their MGNREGA wages almost exclusively for day-to-day spending; they cannot save money or make investments that would help them step up and step out.

Although MGNREGA can achieve SP and CR outcomes by building public assets that support local livelihoods and are durable in the face of increasing climate impacts, interviewees stressed that few durable assets had been built in Alsisar and Chirawa. This shows there is both a gap and an opportunity to develop more durable infrastructure – such as irrigation facilities – that could help households step up and out of poverty into more climate-resilient livelihoods.

Overall, the benefits of both WBCIS and MGNREGA, and the extent to which they support hanging in, stepping up and out, accrue to relatively distinct social groups in Jhunjhunu. Both schemes' potential to support hanging in and stepping up is undermined by their design features and local implementation capacity. In the case of WBCIS, these relate to challenges

of access for different social and economic groups, accuracy (basis risk), transparency and timeliness in payments. For MGNREGA, the challenges in delivering SP and CR outcomes result from technical capacity and political commitment at the local level.

5.3 Pathways for aligning SP and CC

The main aim of our work on social protection and climate resilience is to identify entry points for aligning SP and CC policy responses. Through our analysis of WBCIS, a standalone climate change response that promotes SP and CR outcomes, and MGNREGA, a standalone SP programme with several mechanisms that aim to climate-proof wages and assets, we hoped to identify entry points for aligning the two programmes to deliver more durable SP and CR outcomes for the rural poor.

Evidence from our first case study in Andhra Pradesh (Steinbach *et al.* 2016) and earlier fieldwork in Ethiopia (Kaur *et al.* 2016) suggests there are at least two possible approaches to aligning SP and CC policy responses:

1. A **mainstreamed approach**, where climate change is mainstreamed into an existing social protection programme to deliver joint SP and CR outcomes. For instance, in Andhra Pradesh GIZ's MGNREGA-EB programme is mainstreaming climate-resilience into MGNREGA by building the capacity of MGNREGA officials to plan, design and construct more durable, climate-resilient assets.
2. A **layered approach**, where social protection and climate change programmes are delivered simultaneously or sequentially in the same area, targeting the same beneficiaries. For example, households in Ethiopia can sequentially access the Productive Safety Net Programme (PSNP), a public works programme, and weather-based insurance through the R4 Rural Resilience Initiative (see Box 4).

In Jhunjhunu we found that different social and economic groups are more likely to access MGNREGA and WBCIS. Poorer households and those without land tend to use MGNREGA during non-farming seasons to boost household income – in many cases with women using the allotted household days for MGNREGA

while men work as wage labourers on larger farms or seasonally migrate. Among our interview respondents, MGNREGA is particularly important for households in Alsisar without access to irrigation. By contrast, wealthier households often have land titles and can therefore take out agricultural loans which automatically provide them with insurance coverage.

This variation in socio-economic access to MGNREGA and WBCIS suggests there is an opportunity for a layered approach to aligning the two programmes. As in the case of R4 in Ethiopia, a layered approach would see poorer households build up income, assets and capabilities over time to a point where they would be less reliant on MGNREGA and could either graduate into a scheme like WBCIS that provides crop insurance, or simultaneously access the two. In both of these scenarios, greater access to financial instruments (grants for MGNREGA wages, subsidies for WBCIS premiums and insurance payments in the event of crop loss) and more diverse sources of finance (national public finance for MGNREGA wages and WBCIS

premiums, national and international private finance for insurance claims payments and re-insurance coverage) would help households protect and accumulate income, assets and capabilities.

However, there are a number of contextual constraints and design features of WBCIS and MGNREGA which hold back poor households from moving along a pathway from labour guarantees to insurance in a sequential approach or simultaneously accessing the two. If policymakers want to improve SP and CR outcomes for the poorest and most vulnerable, they must adopt a two-pronged strategy to overcome these constraints. First, they must address gaps in the technical design and local implementation of WBCIS and MGNREGA which limit the ability of these programmes to help households hang in, step up and step out. Second, they must address structural barriers that limit the ability of the poorest households to access WBCIS either sequentially or simultaneously with MGNREGA.

BOX 4: LAYERED APPROACH TO SP AND CC ALIGNMENT – LINKING INSURANCE AND PUBLIC WORKS PROGRAMMES IN ETHIOPIA

The Productive Safety Net Programme provides cash-for-work to food insecure families in Ethiopia. Unlike MGNREGA, the PSNP is not an entitlement. It is targeted at the poorest families in the most food insecure districts, but users are encouraged to graduate from the scheme.

The R4 Rural Resilience Initiative provides a weather-based insurance scheme to farmers. Because the majority are too poor to pay for premiums in cash, they pay with their labour on public works. R4 participants are predominantly selected from PSNP participants, and labour under R4 is coordinated with PSNP

works. Thus, unlike in the current case study, users of insurance generally benefit from the PSNP as well, allowing them to combine regular payments from wage labour with payouts from insurance.

An impact evaluation shows that R4 allows people to protect and accumulate assets in the face of drought relative to non-users (Norton *et al* 2014). Our own findings (Kaur *et al.* 2016) suggest that large claims payouts from R4 are used to purchase livestock (stepping up), while the smaller, more predictable payments from PSNP are used for day-to-day costs (hanging in).

5.4 Next steps

In order to help households move along an income, asset or capability pathway out of poverty and into climate resilient livelihoods, both MGNREGA and WBCIS require improved design, mechanisms and implementation. Here we present recommended next steps based on our observations in Jhunjhunu:

5.4.1 MGNREGA

- **Higher wages** would help households accumulate income, which they could use to manage risk during times of shocks, invest in alternative livelihoods or support the education of their children. Our interviews in Jhunjhunu suggest that daily wage rates are significantly below the maximum MGNREGA wages in Rajasthan.
- **Improved capacity to plan and design durable, climate resilient assets** could help households step up and step out by accumulating or diversifying their assets and capabilities. For example, in Alsisar, MGNREGA wage-seekers could build irrigation facilities and other infrastructure that supports water management and improved farming practices in the context of increasing drought. Improved assets could boost household incomes, and technical support could develop new skills which could be used beyond MGNREGA labour.

5.4.2 WBCIS

- **Improved levels of transparency surrounding payments and the claims process** could help farmers plan more effectively in the event of crop loss, and therefore hang in despite climate shocks. To improve transparency and build trust with farmers, WBCIS data should be released to the public through channels that are accessible to farmers. **Training and outreach activities** should also be used to improve farmers' understanding of insurance products.

- **Greater investment in automated weather stations can improve the accuracy of crop loss and claims payment**, which can help farmers hang in better during shocks. Processes to improve verification at the farm level should also be introduced to corroborate findings from automated weather stations and build trust with farmers. Smartphone technology, which will play an important new role under the PMFBY, should be considered.
- The claims payment system should be reformed so that **rapid payments can be made for lost sowing opportunities or early season crop losses**, rather than waiting until 45 days after the end of harvesting. Such payments would help farmers hang in or step up by providing them with finance to invest in alternative livelihood strategies.
- **Insurance schemes should switch from insuring the cost of cultivation to insuring predicted income from crop yields.** By basing claims on anticipated yields, farmers would not lose any income in the event of climate-related shocks. This would allow them to either hang in despite losses or step up by investing in new livelihood strategies.

5.4.3 Alignment

To promote better alignment between MGNREGA and WBCIS, policymakers also need to address structural constraints that limit the ability for the poorest and most vulnerable to benefit from the two schemes and improve their opportunities to move into more secure, climate resilient livelihoods. The biggest constraint to poor households accessing WBCIS is the lack of access to agricultural loans which require land titles, collateral or guarantees from landholders on behalf of tenant farmers. Reforming rules such as these and extending financial services to a greater number of the landless poor would enable more households to simultaneously access both MGNREGA and crop insurance.

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Social protection and climate change programmes are two public policy responses that governments use to address the challenges of poverty, climate vulnerability and gender inequality. Social protection programmes provide a safety net for households by providing cash/asset transfers and labour market instruments to address the immediate and underlying socio-economic risks facing the poor. Climate change programmes use a range of policy, financial, technological and capacity-strengthening measures to address climate change vulnerability. Despite the fact that most countries have comprehensive strategies for both social protection and climate change, there have been few attempts to align the two to develop more durable pathways out of poverty and climate vulnerability.

This paper is the second of two case studies that examine how aligning social protection and climate change interventions could help households manage the risks they face, and set them on a path out of poverty and into climate-resilient livelihoods. It presents a case study of the Weather-Based Crop Insurance Scheme (WBCIS) and the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in India, based on fieldwork in the northwestern state of Rajasthan.

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