



MGNREGS

Integrated watershed management and climate resilience

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- Supporting public planning processes in delivering climate-resilient development outcomes for the poorest
- Supporting climate change negotiators from poor and vulnerable countries for equitable, balanced and multilateral solutions to climate change, and
- Building capacity to act on the implications of changing ecology and economics for equitable and climate-resilient development in the drylands.

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This report explores whether and how the assets delivered under Mahatma Gandhi National Rural Employment Guarantee Schemes can contribute to long-term adaptation by the rural poor in India. Based on a desk review and interviews across three arid and semi-arid Indian states, it investigates the design and policy evolution of MGNREGS as a vehicle for resilience building. The report identifies policy and design opportunities through which the provision of assets under MGNREGS can improve the long-term resilience of rural beneficiaries.

Contents

Acronyms	4	3 MGNREGS in practice today	23
Summary	5	3.1 Challenges in implementing MGNREGS	23
1 Introduction	7	3.2 Best practices for climate-resilient planning under MGNREGS	26
1.1 MGNREGS and the changing climate	8	4 Opportunities to improve resilience under MGNREGS	33
1.2 Scope of the report	8	4.1 Expanding the focus from physical to social resilience	34
1.3 Approach	9	4.2 Incentivising converging relationships	35
2 Taking stock of resilience under Indian policy	10	4.3 Adopting a long-term adaptation perspective	37
2.1 Early watershed management approaches	10	5 Conclusion	39
2.2 From Integrated Watershed Management Programme (IWMP) onwards	13	Appendices	40
2.3 A change of emphasis: money flows towards irrigation	13	References	41
2.4 The evolution of MGNREGS	17		

Acronyms

BPL	Beyond the poverty line
BRLF	Bharat Rural Livelihoods Foundation
CFP	Cluster Facilitation Project
CFTs	Cluster-level Facilitation Teams
CLART	Composite Land Assessment and Restoration Tool
CRISP-M	Climate Resilience Information System Planning Tool for MGNREGS
CRWs	Climate resilient works
CSOs	Civil society organisations
DCF	Devolved climate finance
DDP	Desert Development Programme
DPAP	Drought Prone Areas Programme
FCDO	Foreign, Commonwealth Development Office
GIS	Geographic information services
Gol	Government of India
IAY	Indira Awas Yojana
ICRG	Infrastructure for Climate Resilient Growth
IGWDP	Indo-German Watershed Development Programme
INRM	Integrated natural resource management
IWDP	Integrated Wasteland Development Programme
IWM	Integrated watershed management
IWMP	Integrated Watershed Management Programme
MEL	Monitoring, evaluation and learning
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MoRD	Ministry of Rural Development
MWC	Mission Water Conservation
NABARD	National Bank for Agriculture and Rural Development
NRLM	National Rural Livelihoods Mission
NRM	Natural resource management
PMAY	Pradhan Mantri Awas Yojana
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
SHGs	Self-help groups
SRIJAN	Self-Reliant Initiatives Through Joint Action
WDC	Watershed Development Component
WDF	Watershed Development Fund
WOTR	Watershed Organisation Trust

Summary

Long-term resilience through MGNREGS assets

The Mahatma Gandhi National Rural Employment Guarantee Act is one of the largest social protection programmes in the world, providing guarantee of income to some 55 million people every year. The Act and associated schemes (MGNREGS) are recognised by the Government of India as initiatives to address the problem of climate change, while simultaneously improving the livelihoods of the poor, particularly agriculture-dependent rural people, who are facing growing threats to their livelihoods from increasing climate variability.

MGNREGS can support rural populations' resilience by providing income in the short term, but also through a devolved national architecture with a huge potential for creating assets that can improve long-term resilience. For example, resilience can be delivered by creating integrated watershed management (IWM) assets, which historically have played a primary role in addressing poverty and vulnerability in India.

Several studies have explored the resilience benefits provided by social protection programmes globally, and more specifically in India. Despite a growing body of evidence on MGNREGS, there remains disagreement on whether and to what extent MGNREGS has provided and can provide climate resilience benefits beyond short-term income provision.

Approach

This report explores whether the assets delivered under MGNREGS can contribute to long-term climate adaptation for India's rural poor. Using desk-based policy review triangulated by multi-stakeholder key informant interviews, it investigates the evolution of the policy framing and design features of MGNREGS. We first review the evolution of key Indian programmes that have addressed poverty, vulnerability and climate resilience, with a focus on integrated watershed management (IWM) approaches that have played a critical role in policy and practices to build resilience in

rural rainfed agriculture areas as a basis for resilience programming in Indian policies. We then review the current challenges experienced by national and local actors which limit the delivery of resilience outcomes through MGNREGS's assets. We provide a set of eight best practices observed in the planning and delivery of assets under MGNREGS which promote long-term resilience.

Findings

Over the years, MGNREGS has provided guidance for applying an IWM approach to the creation of some of its permissible assets. Despite ongoing challenges, best practices have emerged, showing the possibility for improving the resilience of beneficiaries – especially when best practices for IWM assets have been adopted.

Given that MGNREGS is primarily designed to provide sporadic income in times of shock, there are inherent tensions in managing expectations that MGNREGS must, alone and systematically, deliver long-term resilience. There is a clear need for convergence with other IWM activities and other programmes in order for MGNREGS to be able to fulfil the dual goals of income provision and long-term resilience. While the national Act provides little space for changes to the legislation, we found that state – and district-level authorities have the power to prioritise and catalyse convergence, organisation and resilience under their jurisdiction. Rather than a systemic change in how MGNREGS works, a change of perspective and practical improvements by key institutional actors can unlock longer-term resilience from created assets.

These changes can be implemented through two key windows. The first is through harnessing the dedication and commitment of state and district officials, who have the discretion and authority to prioritise convergence, coordination and a climate focus in their implementation of MGNREGS. The second is through improving annual guidelines and the Master Circular, which could crystallise the best available science and evidence from MGNREGS.

We identified three areas of opportunities for change:

1. Expanding the focus from physical to social resilience

Increasing the focus on **the delivery chain mechanisms for asset delivery** (and channelling appropriate funding) could increase resilience by increasing asset quality while building better governance systems for their delivery. It is now well evidenced that there are several dimensions of resilience beyond assets and livelihoods. As such, MGNREGS could better **encourage the social dimensions of resilience** by adding a range of social activities that ensue from assets as permissible types of work. **Tracking and assessing differentiated impacts of MGNREGS** is important to enable the scheme to evolve, especially with regard to understanding MGNREGS's impact on vulnerable social groups.

2. Incentivising converging relationships

Creating assets that deliver long-term resilience via MGNREGS requires **convergence between MGNREGS and other programmes**. Creating positive long-term outcomes requires the alignment of a series of social, economic, technical and contextual factors that can only be achieved by linking programmes. However, there are no convergence programmes today that include a focus on IWM – effectively leaving a gap in the potential for MGNREGS to deliver long-term resilience for the rural poor. Ultimately, reprioritising IWM through new or other revised national programmes is essential to provide the mass asset creation required to respond to climate change and promote resilience in rural areas.

Focusing on district governance can help circumvent national programmatic issues. Districts are the scale at which integrated watershed development is both administratively and institutionally feasible, as recommended by the MGNREGA guidelines. At this scale, system externalities and trade-offs between priorities identified by local levels can be catalogued and potentially reconciled – as exemplified by successful case studies in this report.

Acknowledging civil society organisations (CSOs) as integral parts of the MGNREGS system to support convergence and cross-programme linkages is critical for backing up governmental institutional memory. CSOs are key agents of the convergence puzzle, as they can bring other types of funding from multilateral and bilateral development agencies to add another layer of convergence. More importantly, CSOs' expertise for facilitating participatory approaches is critical for successful community involvement.

3. Adopting a long-term adaptation perspective

Despite MGNREGS guidelines emphasising the need for using geographic information system (GIS) technologies in asset planning as part of IWM practices, few initiatives systematically use climate decision-making tools that **integrate different forward-looking climate scenarios**. There is a need to systematically incorporate data-driven evidence with participatory climate risk and vulnerability assessments in the MGNREGS planning process at multiple scales.

Longer-term planning of assets within a landscape is necessary to produce fewer but successfully adaptive assets and avoid creating a panoply of maladaptive assets. Climate change is expected to drastically affect rainfed arid and semi-arid regions; assets and structures planned for the current or previous climate may not be viable even on a short-term horizon. Under the current short-term perspective, which aims to complete block-level workplans within two years, it is difficult to envisage that assets will remain useful for more than five, perhaps ten years.

1

Introduction

Over the past decades, global poverty levels have dramatically decreased (Beegle and Christaensen, 2019; Wietzke, 2020). This progress shows promise for improving the wellbeing of millions of people worldwide. However, the increasing frequency and magnitude of climate changes and climate shocks — and other shocks such as the COVID-19 pandemic — pose a critical threat to the livelihoods of local communities globally (World Bank, 2020). Increasing climatic shocks and changes threaten sustainable development advances to date and risk pushing over 100 million people back into poverty by 2030 (Diffenbaugh and Burke, 2019; Hallegatte, 2016; Lakner et al., 2020; Steinbach et al., 2017). In 2017, global economic losses attributed to climatic disasters were estimated at over US\$300 billion (Jongman, 2018). The burden of climate impacts is primarily felt in low-income countries, and within them, among the poorest people, and especially resource-dependent communities in rural areas (Mendelson et al., 2006; Mertz et al., 2009; Morton, 2007).

Since its independence, India has implemented several programmes that address the poverty of resource-dependent communities, resulting in significant reductions in poverty levels across the country (Alkire et al., 2020; Datt et al., 2020; World Bank, 2021). However, India is also among the countries most vulnerable to climate risks (Eckstein et al., 2019), which pose direct threats to current and future development progress. Climate extremes and changes have increased environmental disasters such as droughts and floods, in turn causing crop failure, falling incomes, increased migration and increased social inequality (Gray and Srinidhi, 2013; Picciariello et al., 2021; Winsemius et al., 2018). Losses to the

Indian economy of US\$37 billion are estimated due to climatic changes in 2018 alone. Thus, India faces the challenge of identifying poverty reduction policies that address the multifaceted risks posed by climate change (Diffenbaugh and Burke, 2019; Steinbach et al., 2017).

One of India's key poverty reduction programmes is the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and its associated Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). MGNREGS has been India's flagship social protection programme, and is one of the largest programmes in the world in terms of number of beneficiaries (World Bank, 2018). MGNREGS aims to reduce poverty and enhance livelihood security of households in rural India. It does so by providing guaranteed wage employment to rural people, through the creation of productive assets that in turn promote local economic and infrastructure development.

Opportunities for social protection programmes to also provide resilience to climate shocks and changes have been increasingly recognised — especially as a move to avoid emergency humanitarian assistance (Ulrichs and Slater, 2016). For example, social protection programmes providing cash transfers and access to income allow people to meet their needs in times when shocks undermine their livelihoods (Davies et al., 2009; Béné et al., 2012; Kuriakose et al., 2012). Research shows that much of the potential for social protection programmes to contribute to improving resilience lies in their flexibility and capacity for a timely response to shocks in the programme design (Ludi et al., Forthcoming; Kuriakose et al., 2012; Vincent and Cull, 2012).

1.1 MGNREGS and the changing climate

Seventy percent of India's population lives in rural areas (Bhagat, 2011) and changes in rainfall patterns drastically affect the poorest among India's 1.38 billion population, namely farmers practising rainfed agriculture (World Bank, 2021). More than 56% of the total agricultural area of India is rainfed (Goyal and Surampalli, 2018), with agricultural productivity significantly lower than in irrigated areas. Rainfed areas are characterised by extreme climatic variability, exhibiting erratic and unpredictable rainfall patterns. Ecologically, rainfed areas vary greatly, compassing 73 distinctive agroclimatic zones with hilly, mountainous and often rugged terrain. These areas typically suffer from severe degradation and soil erosion due to deforestation and unsustainable land-use practices (Gray and Srinidhi, 2013). Local populations often seasonally migrate because of fluctuations in livelihood opportunities, with Northern India being particularly sensitive to these issues due to its arid and semi-arid climate (Dubey and Sharma, 2018; Lobell et al., 2012).

With agriculture-dependent rural people facing growing threats to their livelihoods due to increasing climate variability and extremes, the central Government of India (GOI) recognises the important function of MGNREGS – and claims the scheme is already helping to build the climate resilience of India's rural poor: *“The Ministry of Environment, Forest and Climate Change recognises MGNREGA as one of the 24 key initiatives to address the problem of climate change, while simultaneously improving the livelihoods of the poor”* (MoRD, 2018).

The principal objective of MGNREGS is to provide income insurance through the provision of cash through constitutionally guaranteed employment available on demand. Protecting rural households against seasonal vulnerability is particularly important in India as almost two-thirds of the population rely on agriculture as their main livelihood. As such, MGNREGS is grounded in the concept of seasonable and climatic variations. A minimum of 100 days of paid employment – referred to as labour – is available on request for any rural household that demands it. An additional 50 days of paid labour is available upon the official declaration of an environmental hazard within a state. This wage labour is used to construct a range of physical assets, which delivers MGNREGS' secondary objective – to directly support and strengthen the natural resource base and agriculture and allied activities, including through productivity enhancement (The Mahatma Gandhi National Rural Employment Guarantee Act, 2005). To date, more than 33 million assets have been built under the auspices of MGNREGA. These assets were implemented across 262,380 blocks – the smallest units of administration – covering 6,887 sub-

districts, with the participation of more than 250 million beneficiaries to date, or 55 million per year on average (Giribabu et al., 2019).

Current MGNREGS guidelines specify that the planning of assets should be guided by certain principles for the creation of natural resource management (NRM) assets, and more specifically towards integrated watershed management (IWM) (MoRD, 2020). Historically, IWM has been one of the primary approaches for addressing poverty and vulnerability in India. This is particularly the case in marginal semi-arid, rainfed areas of the Central Plateau, which are home to a large share of the poorest, most food-insecure and vulnerable people in the country (Reddy and Syme, 2015). IWM is based on the assumption that climate change will increase rainfall uncertainty and variability throughout the region; thus the best way to build climate resilience is to improve dependable surface and groundwater storage (James et al., 2018). The approach aims to help conserve and improve in situ soil moisture, and to check soil erosion and increase available water resources (especially groundwater) through the construction of soil and water structures based on local geological and hydrological features. By reducing water scarcity, this approach will in turn enable improved food security and more resilient livelihoods. In the face of the climate crisis, the creation of well-planned local infrastructures is a critical mechanism for enhancing the resilience of communities.

MGNREGS's potential for improving the resilience of rural populations is twofold. First, MGNREGS provides income that can help people cope during shocks. This first contribution has more prominent effects on short-term resilience through the provision of wages (Knippenberg and Hoddinott, 2019). Second, MGNREGS provides a devolved national architecture with a huge potential for the creation of IWM assets, and NRM assets more widely. Assets can directly improve the resilience of local participants and beneficiaries in rural, rainfed agriculture areas. Evidence on the latter remains limited; this report will explore this premise (Davies et al., 2012; Ulrichs et al., 2019).

1.2 Scope of the report

Several studies have explored the resilience benefits provided by social protection programmes globally, and more specifically, MGNREGS's impact on beneficiary resilience. Income insurance through MGNREGS can support people's resilience in the short term. Despite a growing body of evidence on MGNREGS, there remains disagreement on whether, and to what extent, MGNREGS has provided and can provide climate resilience benefits beyond short-term provision of income in the face of shocks (Adam, 2015; Eriksen et al., 2021; Kaur et al., 2019; Sambodhi and WOTR, 2020; Steinbach et al., 2017). This is partly due to

the unavailability of longitudinal data on resilience in MGNREGS, but also the difficulty of obtaining data following shocks.

This report will explore whether the assets delivered under MGNREGS can contribute to long-term adaptation by the rural poor in India. Our overarching objective is to identify policy and design opportunities through which the provision of assets under MGNREGS can improve the long-term resilience of rural beneficiaries. Instead of measuring the contribution of assets to resilience outcomes, this report takes a step back to investigate the design and policy evolution of MGNREGS as a vehicle for resilience building. We ask:

- Does MGNREGS integrate IWM as an approach for reducing vulnerability of rural populations in rainfed areas in India, and if so, how?
- Which design features of MGNREGS support or hinder opportunities for the social protection programme to deliver long-term adaptation?
- What are the policy and design opportunities under MGNREGS that could increase the long-term resilience of rural populations?

This report's primary audience is national and state-level stakeholders in India who are responsible and directly involved in the planning and delivery of assets through MGNREGS. This includes national and state decision makers in the GOI, along with civil society practitioners who are supporting them. Our secondary audience is international and national experts working directly on MGNREGS or indirectly on social protection programmes, climate resilience and asset planning in sustainable development.

This report builds on five years of research in the frame of the International Institute for Environment and Development (IIED) providing technical support to India's Ministry of Rural Development (MoRD) as part of the Infrastructure for Climate Resilient Growth (ICRG) programme, funded by the UK Foreign, Commonwealth and Development Office (FCDO).

1.3 Approach

This report takes the approach of desk-based policy review triangulated by multi-stakeholder key informant interviews to investigate the evolution of the policy framing and design features of MGNREGS. As such, this paper does not take an evaluative approach that assesses resilience outcomes nor undertake an evaluation of MGNREGS's performance. Rather, it serves as a review of its processes and design features to identify entry points for changes towards long-term resilience within the context of other Indian national policies.

This report first reviews literature from academic, practitioner and governmental sources before presenting insights from key multi-sectoral stakeholder interviews. While the literature review expands beyond MGNREGS and India, we conducted 27 key informant interviews focusing on the experiences and evidence from the three states of Rajasthan, Uttar Pradesh and Madhya Pradesh. These three states were selected from previous research phases as key arid and semi-arid landscapes with a high concentration of rural rainfed agriculture farmers. We spoke to ten national and state civil society practitioners, 14 government actors at state, district and block levels, along with three international experts. While the experiences vary between – and within – states, national and international actors have supported that the insights our data offers are nonetheless relevant more broadly and transferable to other states. The report includes three core sections as follows:

Following the introduction, the second section reviews the policy evolution of key Indian programmes that have addressed poverty, vulnerability and climate resilience over the past decades. We trace and detail historical approaches since the 1970s, with a focus on IWM approaches, which have played a critical role in policy and practices to build resilience in rainfed agriculture rural areas.

The third section reviews the current challenges and barriers experienced by national and local actors which limit the delivery of resilience outcomes through MGNREGS's assets. We provide a set of eight best practices observed in the planning and delivery of assets under MGNREGS which promote long-term resilience. This section is primarily based on stakeholder interviews and triangulated with literature.

Finally, we highlight opportunities and entry points for how MGNREGS' asset creation can better address the problem of climate change and improve medium- to long-term climate resilience benefits for poor rural households.

In this report, we refer to resilience throughout the report without specifying that climate shocks and changes are the only stressors considered. This is because shocks and stressors are frequently complex and multi-faceted, and it is seldom appropriate or possible to isolate one impact from the others. For example, the impacts on people's resilience of a recession following a long period of drought, or of political instability resulting from extensive migration due to floods, are indissociable. As such, while this report focuses primarily on how MGNREGS can improve climate resilience, we simply refer to resilience, rather than climate resilience, to convey the multidimensionality of the lived experiences.

2

Taking stock of resilience under Indian policy

The Indian government has adopted myriad approaches to address poverty and vulnerability among rural farmers across the country. This section focuses on approaches targeted at farmers in rainfed areas of the country.

These approaches are referred to under the broad term 'watershed management'. This includes the construction of physical assets and public works associated with natural resource management that are promoted as contributing to the medium- to longer-term climate resilience of rural populations.

While resilience was not a commonly used term half a century ago, the conceptual and programmatic rationale for using watershed management and its associated infrastructure to build climate resilience is grounded in a substantial body of historical programming and policy experience that has evolved out of efforts to tackle poverty and the drivers of vulnerability to climate variability. In order to understand the potential and opportunities for MGNREGS to deliver improved resilience outcomes, we need to unpack the historic legacy and political dynamics upon which MGNREGS is built. This will make clear how key national watershed management policies came to acknowledge that the contribution to the resilience of physical assets depends upon their being embedded within a much wider supportive enabling environment which situates the assets within their social and political milieu and

provides an appropriate institutional framework for planning, implementing, monitoring and maintaining the assets in a sustainable way.

2.1 Early watershed management approaches

Watershed management has become one of the main approaches for rural development and poverty reduction in climate-stressed, rainfed areas of India (Reddy and Syme, 2015). Watershed management involves using a watershed as the natural administrative unit for organising the use of land, water and other natural resources within a given area, with the aim of providing goods and services for the local population in a sustainable way. While they originally considered mainly hydrological and conservation objectives, today watershed management approaches take into consideration the complex interdependencies (socio-economic, institutional, and biophysical) between soil, water and land use within the watershed, and consider the relationships between upstream and downstream areas (Darghouth et al., 2008; Ffolliott et al., 2002; Nearly, 2000). There is an emerging consensus globally that watersheds are the best units for managing ecosystems (Montgomery et al., 1995).

The integration of watershed management approaches in Indian policy has evolved greatly over the last 50 years since the first schemes (see Box 1). The Drought Prone Areas Programme (DPAP), the Desert Development Programme (DDP) and the Integrated Wasteland Development Programme (IWDP) were initiated by the MoRD in the early 1970s. The main focus of these early programmes was on improving agricultural productivity through soil conservation and water harvesting by means of technical interventions and the construction of physical assets, such as contour bunding and check-dams, and it was as part of these programmes that the principles behind the ridge-to-valley approach were developed (see Box 1). At this time, projects were top-down and externally driven, with the benefits mostly captured by landowning households (Gray and Srinidhi, 2013; Raju et al., 2008).

In line with evolving paradigms of watershed management design at the international level, by the 1990s, the focus widened beyond the selection and siting of physical structures and assets. NGOs

began experimenting with participatory, community-led watershed approaches, assisted by initiatives such as the Indo-German Watershed Development Programme. These helped to address issues of equity and sustainability by distributing the benefits much more widely (Smyle et al., 2014). Participatory approaches proved both successful and influential and were adopted and incorporated into the national Common Guidelines for Watershed Development by the Ministry of Rural Development (MoRD) in 1994.

In the two decades that followed, a series of expert technical committees developed successive iterations of the national watershed guidelines that increasingly emphasised social and economic objectives in addition to the original focus on soil and water conservation (see Box 1). Watershed projects were conceived as comprehensive rural development programmes, using the watershed as both an entry point and, increasingly, as a unit of decentralised governance (Raju et al., 2008; Gray and Srinidhi, 2013; Smyle et al., 2014). The various guidelines were widely adopted and were

BOX 1. MODELS OF WATERSHED MANAGEMENT IN INDIA

A watershed is defined as a topographic and geographic area comprising a system of streams, rivers and other water bodies that drain into a common location at the bottom of the basin. Depending on where the boundaries of the drainage system are drawn, watersheds can vary in size from a few hectares to thousands of square kilometres (Wang et al., 2016). A drainage area of 500 hectares or less is referred to as a micro-watershed and has been a common unit for development interventions, both internationally and within India.

Classic integrated watershed management: ridge-to-valley

Watershed development projects in India in the 1970s and 1980s were primarily concerned with improving agricultural productivity in rainfed areas by addressing soil degradation and improving the availability of water in the treatment area (normally a micro-watershed). A systematic and comprehensive technical planning method for designing and siting physical assets, infrastructure and associated development interventions was gradually developed, called 'ridge-to-valley', which in India has become synonymous with watershed projects.

The 'ridge-to-valley' approach uses infrastructure to exploit the natural hydrology of the watershed to detain, divert, store and maximise the productive use of the rainfall and runoff in the area, bringing both agricultural and livelihood opportunities. Natural drainage lines are used to site infrastructure such as check-dams, weirs and recharge structures, and other works are built in farmers' fields. The approach also includes other land treatments and land uses (for example, in-field conservation practices, reforestation and improved pasture). The method is 'integrated' in that it considers the topography of the watershed as a whole and considers the biophysical interactions between highland ridges and the valleys. Ideally, soil conservation structures in the upland ridge areas should be completed before the water harvesting structures in the valley; this 'multi-tier sequenced approach' protects valley structures by preventing siltation and reduces the risk of damage due to extreme flooding (Gol, 2011).

Ridge-to-valley treatment plans can be prepared with physical contour maps; however, GIS planning systems, which offer the possibility of greater scientific accuracy, are preferred today. These allow multiple layers of complementary data to be analysed together or separately. This can include biophysical (eg topographical and geo-hydrological data, soil type, drainage models and so on), and socioeconomic information (eg land ownership, vulnerability data and so on) (Smyle et al., 2014).

Participatory watershed approaches and watershed plus

Following the publication of the Common Watershed Guidelines of 1994–95, successive iterations of the guidelines moved beyond a focus on soil and water conservation to include wider social and economic objectives, such as poverty alleviation, sustainable use of natural resources, livelihoods and climate resilience. This more holistic approach came to be known informally as ‘watershed plus’. Taking the ridge-to-valley watershed plan as an entry point, watershed plus programmes take integration a step further and include planning and governance arrangements for achieving the social, economic and environmental development of the village. Watershed plus programmes consist of many interlinking components, including:

- A comprehensive, multi-year integrated project plan developed using participatory methods.
- A focus on participation by creating and building the capacity of local village institutions to act as partners in the planning, implementation and monitoring of the programme. This includes user groups, self-help groups (SHGs) and participatory village watershed committees.
- Integrated planning of soil conservation and water harvesting structures using the ridge-to-valley approach.
- A focus on delivering benefits to everyone, particularly to women, the landless and marginalised groups such as scheduled castes (SC) and scheduled tribes (ST) through livelihood development interventions, for example credit extension through SHGs and funds for micro-enterprises.
- Participatory monitoring, evaluation and learning (MEL) with social audits used as a tool to enhance equitable and sustainable distribution of natural resources.
- Extensions of watershed plus also consider market access and marketing (eg cooperatives and producer groups), climate smart agriculture and crop diversification.

(Drawn from NABARD, 2016; Common Watershed Guidelines, 2011).

Integrated natural resource management (INRM)

INRM is an approach for systematically managing and planning natural resources in a sustainable and holistic way. As defined and used in MGNREGS guidance, it is largely equivalent to watershed plus, and includes sustainable land-use planning, watershed management, participatory planning, flood protection and drainage management, and adaptive management (Mihir Shah Committee, 2012; MoRD, 2017b).

Integrated water resources management (IWRM) and integrated landscape management (ILM)

Both these concepts apply to stewardship and governance of resources at wider, systemic scales, such as the ecosystem or landscape. In an Indian context, they would refer to a combination of watershed management techniques such as ridge-to-valley, with the addition of watershed plus objectives, and nested, multi-scalar governance up to the landscape level.

“Integrated Water Resources Management is a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.” (Global Water Partnership, 2011).

used to design watershed programmes by NGOs, the National Bank for Agriculture and Rural Development (NABARD) and major donors such as the World Bank (Smyle et al., 2014) in addition to the three national government programmes. This new generation of watershed projects focusing on poverty alleviation and livelihoods became known informally as ‘watershed plus’ (Reddy and Sahu, 2013; Reddy and Syme,

2015; Routray and Mohan, 2012). Physical assets and infrastructure based on a ridge-to-valley analysis at the local level remained a core, distinctive feature of the approach – but policy now formally acknowledged that a sophisticated enabling environment involving multiple actors at the various scales was essential to delivering equitable and long-lasting resilience benefits.

2.2 From Integrated Watershed Management Programme (IWMP) onwards

In 2008, the MoRD consolidated all three national watershed development programmes (DPAP, DDP and IWDP, see above) into one comprehensive Integrated Watershed Management Programme (IWMP). Watershed development projects initiated under the IWMP followed the watershed plus model at the community level, but new guidelines brought significant institutional innovation at other scales (Forum for Watershed and Policy Dialogue, 2008; Gaur and Milne, 2015; GOI, 2011). Powers were delegated to the states to initiate and manage projects, and a dedicated multi-scalar institutional structure was established, with multidisciplinary teams at the national, state and district level (see Box 2) to ensure professional management, planning and coordination across scales. Projects were expected to last between four and seven years, comprising three distinct phases: a preparatory phase of one to two years involving capacity building and preparation of the watershed plan; a works phase (two to three years) involving asset construction and a focus on developing livelihood activities for the landless and marginalised; and a consolidation and withdrawal phase lasting one to two years. Treatment of clusters

of contiguous micro-watersheds of around 5,000 hectares was encouraged. The uptake of technology such as GIS was encouraged to promote more effective planning, implementation and monitoring. Between 2009 and 2010 and 2014 and 2015, a total of 8,214 projects covering an area of about 39.07 million ha were sanctioned by state governments in 28 states under the IWMP scheme (MoRD, 2017a).

While the IWMP machinery focused on project management and technical aspects, civil society organisations (CSOs) were selected to promote community engagement and sensitisation (see Figure 1). At the village level, projects were planned and managed by a watershed committee appointed by the gram sabha, or village assembly, assisted by a specialised watershed development team. Potential synergies with MGNREGS, which had been set up in 2005 (see below), were immediately recognised, given the fact that over 50% of permissible works under that scheme related to soil and water conservation, and guidelines for convergence and coordination at all scales were soon formalised (MoRD, 2009a, 2013a). A World Bank report on a watershed project in Karnataka concluded that MGNREGA and IWMP would complement each other well: IWMP would bring the benefits of multi-year holistic planning, technical expertise and a focus on local institutional strengthening, while MGNREGS, being demand-driven, would bring substantial additional funding and a direct impact on short-term resilience through its employment guarantee.

BOX 2: INDIAN ADMINISTRATIVE UNITS

Gram sabha: The general assembly of all people in a village.

Gram panchayat: Village-level executive council consisting of representatives elected by the gram sabha.

Block: A unit of planning below the district level covering a number of gram panchayats.

District: A sub-division of a state. Key level for coordination and cooperation between line departments. The appointed head of civil service is called the District Collector, Magistrate or Commissioner.

States: India is a federation consisting of 28 states and eight union territories. There is considerable devolution of power to states under the constitution.

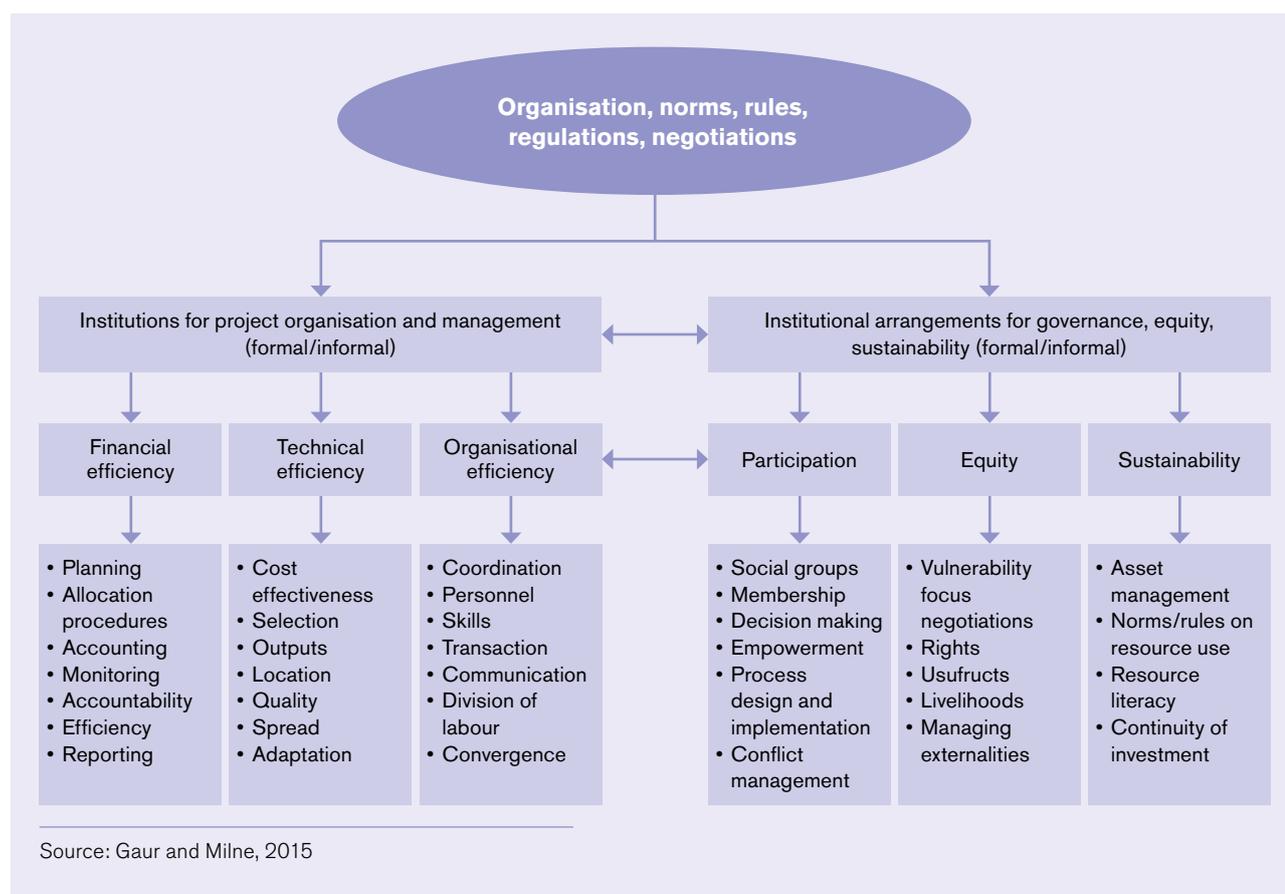
2.3 A change of emphasis: money flows towards irrigation

In 2015, the incoming Modi government introduced a new flagship national water programme: the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) (Department of Land Resources, 2018). The programme's objective is to expand the total cultivable area under assured irrigation by merging the efforts of irrigation and water-related government programmes at the field level and by encouraging the adoption of precision irrigation techniques by farmers. Spearheaded by Prime Minister Narendra Modi, the programme has a high political profile, and US\$500 billion¹ was set aside for implementation between 2016 and 2021.

District and state irrigation plans form the cornerstone of planning and implementation of PMKSY. District plans are intended to be holistic four-to-seven-year plans

¹ US\$500 billion = Rs50,000 crore

Figure 1. Key institutional mechanisms for IWM under IWMP



covering the entire irrigation supply chain of a district, and other plans involving the water sector are expected to be integrated into these through convergence and nested bottom-up planning (DARPG, 2017).² The programme heralded a change in policy emphasis in rainfed areas of the country, with a vision of promoting food and water security by expanding the total cultivable area under assured irrigation at the farm level. However, this change put irrigation at the centre of national policy for improving food and water security in rainfed areas, displacing existing watershed development approaches to a secondary, supporting role.

PMKSY was created by amalgamating four different existing schemes, one of which was the existing IWMP. The IWMP retained a distinct identity as a sub-component within the PMKSY irrigation programme, called WDC-PMKSY. Yet this institutional restructuring was accompanied by a change in the funding ratio for the programme from 90:10 centre/state to 60:40 centre/state, thus placing a much greater responsibility on states to prioritise and finance the schemes they had sanctioned (MoRD, 2017a). Additionally, some 1,832 projects in their early stages were transferred

out of WDC-PMKSY to be financed in their entirety by the states from their own budgets. This means that IWMP has been gradually wound down as a national programme: as of 2021, 80% of IWMP projects were either completed or in their consolidation phase. No further IWMP projects have been sanctioned by the states since 2015.

Thus apart from the now largely inactive WDC-PMKSY component of the PMKSY, MGNREGS now represents the main national development programme addressing resilience through IWM; but without the resources and expertise in watershed planning and coordination that IWMP used to bring (see below).

It is worth noting that there are other small-scale watershed plus initiatives ongoing across the country, such as NABARD's Watershed Development Fund (WDF), set up in 1999 following their experience with IGWDP. NABARD's scheme focuses on relatively small-scale watersheds (a 'watershed encompassing one village is ideal'), not greater than 1,000 hectares, with the aim being to share knowledge and best practice of watershed techniques.

²This includes both IWMP and MGNREGS plans, as described later in the paper.

Table 1. Timeline of key events in India's experience of watershed development programmes

DATE	POLICY/PROGRAMME/GUIDELINES	NOTES
1973–1974	Drought Prone Area Programme (DPAP) initiated. (MoRD)	Programme uses soil and moisture conservation measures to promote economic development in drought-prone areas
1977–78	Desert Development Programme (DDP) (MoRD)	Programme uses reforestation to minimise effects of drought
1989–90	Integrated Wasteland Development Programme (IWDP) (MoRD)	Programme aims to regenerate degraded non-forest land through silvipasture and soil and water conservation at the village and micro-watershed scale
1992	Indo-German Watershed Development Programme (IGWDP)	An influential programme promoting participatory watershed development and community involvement in design, implementation and planning of projects; NABARD, WOTR and other NGOs are involved
1994–1995	Common Guidelines issued for national watershed programmes	First set of national common guidelines for watershed development issued; they institutionalise participatory watershed management, establish local resource and user groups, devolve decision-making power to district/village levels and recommend partnerships between government, NGOs and local groups
1999	NABARD sets up a Watershed Development Fund (WDF)	A specialist fund focusing on micro-watersheds, promoting research into institutional and programme design is launched
2005	Mahatma Gandhi National Rural Employment Guarantee Act and Scheme (MGNREGA)	A national, demand-driven guaranteed employment programme with a focus on the construction of NRM assets is launched
2006–08	MGNREGS scaled out nationally	Permissible MGNREGS assets are not clearly specified and there is no specific focus planning along IWM principles
2008	Integrated Watershed Management Programme (IWMP)	Three separate national watershed related programmes are consolidated into one (IWDP, DPAP, DDP). IWMP adopts the Common Guidelines 2008
2008	Common Guidelines for Watershed Development Programmes (with revised Common Guidelines (2011))	Major revision to guidelines, introducing a multi-scalar institutional architecture for technical and project management aspects of watershed programmes; introduces cluster scale of 1,000 hectares to 5,000 hectares for watersheds
2009	Convergence Guidelines NREGA and IWMP	First initiative to use MGNREGS assets to assist with IWM planning

DATE	POLICY/PROGRAMME/GUIDELINES	NOTES
2012	Shah Committee draft MGNREGA Operational Guidelines	Major revision to MGNREGS; INRM and IWM recommended as planning principles for MGNREGS assets; many ridge-to-valley asset structures introduced as permissible assets for the first time
2014	Cluster Facilitation Team (CFT)	Pilot programme addresses capacity gaps for INRM planning within MGNREGS by hiring CSOs to manage panels of thematic experts (technical secretariats) for gram panchayat planning
2015	Pradan Mantri Krishi Sinchayee Yojana (PMSKY) mission launched	A new programme with an emphasis on irrigation and water harvesting structures rather than integrated watershed development – improving agricultural production (including cash crops); the national Integrated Watershed Management Programme (IWMP) is subsumed within this
2016	Mission Water Conversation Framework (MWC)	The framework mandates INRM and watershed development through convergence (cooperation) between three rural development programmes specialising in water-related activities (MGNREGA, PMKSY, and IWMP) in 2,264 water-stressed blocks
2016	Infrastructure for Climate Resilient Growth (ICRG).	An ongoing pilot programme run in three states to trial the integration of climate risk management process into existing MGNREGA institutional structures; run in collaboration with the GoI, MoRD and the UK's FCDO
2018	Mega-watershed projects in West Bengal (Ushar Mukti) and Chhattisgarh	The projects are trialling an institutional model and operational framework for delivering IWM at the landscape level using MGNREGS; they use multi-scalar embedded institutions involving a combination of stakeholders (CSOs, Bharat Rural Livelihoods Foundation (BRLF) and MGNREGS) with policy coherence and coordination stressed at all levels, with strong participation by the CSO Pradan
2019	Cluster Facilitation Project (CFP) Guidelines	The next phase of the CFT programme (technical secretariat of thematic experts for gram panchayats, 2014) with an emphasis on GIS planning; allows flexible hiring of technical professionals without the need for CSO supervision; mandate is to produce and implement full INRM plans within 18 months
2020	Jharkhand mega-watershed project	Replicates the same model as in West Bengal and Chhattisgarh (started in 2018, above)

2.4 The evolution of MGNREGS

This section reviews the development of MGNREGS, from the early years, when the scheme was being established and the focus was on creating the institutions and mechanisms for delivering its employment guarantee mandate, through its evolution into India's main national scheme for delivering INRM, with a particular focus on IWM in drought-prone, water-stressed parts of the country.

Early years: the MGNREGA statutory framework (2005–11)

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was passed in 2005 and was scaled up nationally over the next two years. Since its inception, the programme's principal mandate has been to improve livelihood security through a rights-based, on-demand income insurance scheme that provides at least 100 days of guaranteed paid employment at the minimum wage. The waged labour is used to construct productive assets in the local community, which contribute to MGNREG's secondary objective: to support and strengthen the livelihood resource base of the poorest and most marginalised groups (Desai et al., 2015; MGNREGA, 2005).

MGNREGS only allows certain categories of works, which are overwhelmingly related to natural resource management in support of agriculture and related livelihood activities. To achieve its employment mandate, the MGNREGA specifies at least 60% of the expenditure should be on unskilled wage labour, and the use of contractors is forbidden. The selection of works to be constructed is determined by an annual bottom-up participatory planning process, which is intended to be

responsive to the priorities and needs of local people (see Box 3).

Early MGNREGS operational guidance only included nine types of assets which were described in very general terms. There was no prioritisation of natural resource management assets, and no mention of either watersheds or watershed management. The elaboration of a five-year District Perspective Plan was suggested, to be guided by village-level planning and holistic analysis of the drivers of poverty (MoRD, 2008). There was criticism of the quality of the assets created in this period, with many works being left unfinished, substandard or short-lived (World Bank, 2011), or found to be unrelated to livelihoods (Rao, 2011), and charges of corruption were frequently levelled at those implementing the scheme (Narayanan, 2016).

Two decisive developments shaped the role of assets as MGNREGS evolved (Narayanan, 2016). First, from 2009 there was a concerted effort by the MoRD to explore opportunities for convergence (see Box 4) between MGNREGS and other government rural development schemes, for example, with the Ministry of Agriculture and the Integrated Watershed Management Programme in the Ministry of Rural Development (MoRD, 2009a, 2009b); this would eventually become a fundamental institutional mechanism for delivering integrated planning. Second, in 2012 a transformational set of draft guidelines was published with the explicit aim of strengthening the link between assets and rural livelihoods, particularly in agriculture (Mihir Shah Committee, 2012). This entailed substantial revision of the implementation architecture, plan allocation, permitted assets and governance provisions of the scheme, and became informally known as MGNREGA 2 (Badhuri, 2012). It was at this time that INRM, and in particular integrated watershed management, became fundamental principles for planning MGNREGS assets.

BOX 3. THE MGNREGS PLANNING PROCESS

From the outset, MGNREGA has featured a distinctive, bottom-up planning process that works through India's local governance system and is based on decentralised planning through village-level institutions. Rural households have the right to propose the selection and location and influence the design of MGNREGS assets through a participatory planning exercise that takes place each year at village assemblies known as gram sabhas, which are convened by government officials from the gram panchayat, the most decentralised layer of Indian government. These discussions and decisions are reflected in the Gram Panchayat Development Plans and prioritised within a 'shelf of work', which MGNREGS guidelines today recommend be contextualised and planned according to INRM principles (MoRD, 2020). The plans are cascaded upwards and consolidated by officials at higher levels of government (particularly at the district level) until the centre approves each state's consolidated annual plan and labour budget). MGNREGS is embedded within the national and state government civil service and has a strong institutional delivery structure from central (national) down to community level. Table 2 sets this out in detail.

Table 2. Institutional delivery structure of MGNREGS

	ASSET DESIGN AND PRIORITISATION	WAGE LABOUR BUDGETING AND RESOURCING
CENTRE	<p>Ministry of Rural Development (MoRD)</p> <ul style="list-style-type: none"> • Sets percentage of works to be undertaken in annual master circular • Sets standard design of assets (works) 	<p>Empowerment Committee</p> <ul style="list-style-type: none"> • Reviews and approves state labour budgets <p>MoRD</p> <ul style="list-style-type: none"> • Approves additional 50 days of wage labour in case of natural calamity
STATE	<p>State rural development (and Panchayati Raj) department</p> <ul style="list-style-type: none"> • Makes changes to permissible assets (works) allowed within the state • Selects 'backward' (vulnerable) blocks for special attention 	<p>State rural development (and Panchayati Raj) department</p> <ul style="list-style-type: none"> • Sets state wage rate • Approves district labour budget and consolidates into state labour budget • Provides guidelines for participatory labour budget (annual) planning • Ensures adequate 'shelf of works'
DISTRICT	<p>Chief executive officer or district collector</p> <ul style="list-style-type: none"> • Integrates natural resource management assets (works) into district irrigation plan • Oversees district-level convergence • Assures achievement of nationally and state-led asset (work) prioritisation: 50% at gram panchayat level, 65% expenditure on natural resource management, 60% for productive agricultural assets <p>Executive engineer</p> <ul style="list-style-type: none"> • Issues technical sanctions (estimates cost of labour and material) for all MGNREGS assets 	<p>Chief executive officer or district collector</p> <ul style="list-style-type: none"> • Consolidates block labour budget into district labour budget
BLOCK (GROUP OF VILLAGES)	<p>Block development or project officer</p> <ul style="list-style-type: none"> • Ensures gram panchayat annual plans contain permissible works and consolidates gram panchayat plans into block plans <p>Technical assistants or junior engineers</p> <ul style="list-style-type: none"> • Provide first technical evaluation of assets (works) 	<p>Block development or project officer</p> <ul style="list-style-type: none"> • Ensures an adequate 'shelf of works' for each block
GRAM PANCHAYAT (VILLAGE)	<p>Technical assistants or gram rozgar sahayaks</p> <ul style="list-style-type: none"> • Help identify works, prepare work estimates and ensure the quality of works, support maintenance of work <p>Workers (job cardholders)</p> <ul style="list-style-type: none"> • Propose works at the gram sabha • Implement works 	<p>Workers (job cardholders)</p> <ul style="list-style-type: none"> • Demand wage labour

Source: Steinbach, D, Soanes, M, Barrett, S et al. (2020) *Deepening knowledge of MGNREGS's contribution to climate resilience: a study of Rajasthan and Uttar Pradesh*. IIED, London. <https://pubs.iied.org/10206iied>

A paradigm shift towards integrated planning (from 2012) and a wider range of assets

Following an extensive review of the performance of MGNREGS (Rao, 2011), the Mihir Shah Committee published an innovative set of draft guidelines recommending a 'paradigm shift' in the MGNREGS planning process. The annual priorities for assets proposed by gram panchayats should move away from *"taking up individual, stand-alone works in a typical 'relief works mode' to an integrated natural resource management (INRM) perspective ... Planned and systematic development of land and husbandry of rainwater following watershed principles to enhance farm productivity and incomes of poor people should become the central focus of MGNREGS works across the country"* (Mihir Shah Committee, 2012, 6.3.4). Water infrastructure was seen as essential for 'value-added' agriculture and expanded livelihood options (Menon, 2013).

To enable this focus on watershed management, the range of permissible works under MGNREGS was clarified and substantially extended. For the first time, all the major structures associated with classic ridge-to-valley watershed approaches (for example, contour bunding/trenches, earthen dams and so on) were included as permissible assets, as were other water-related assets such as springshed structures and groundwater recharging structures. A large range of other structures supporting rural livelihood development was also introduced, including livestock shelters, fisheries assets, compositing structures and sanitation-related works.

Over the years, the range of assets permitted under MGNREGS has continued to expand, and today includes a total of 262 listed assets (also known as works) that can be proposed, selected and constructed; most are those characterised as natural resource management (182), of which 85 are water-related (MoRD, 2020). There are four categories of assets overall, which include:

- **Category A.** Public works relating to NRM, for example: water conservation and water harvesting for groundwater recharging, watershed management works, micro and minor irrigation, renovation of traditional water bodies, tree plantation, horticulture, pasture development etc.
- **Category B.** Community assets/individual assets, for example: land development; bamboo, rubber and coconut plantation; for livestock/fisheries; pasture development etc.
- **Category C.** Common infrastructure, including for NRLM-compliant self-help groups, for example: bio-fertilisers, post-harvest facilities etc.
- **Category D.** Rural infrastructure: including the construction of food grain stores etc.

Recent MGNREGS circulars³ single out the importance of Category A works for building resilience to climate change, as IWM and NRM aim to directly benefit access to resources and livelihoods of poor rural farmers (MoRD, 2020).

Enhanced technical support: cluster facilitation teams and projects

The Shah Committee Guidelines recognised that the potential for INRM planning would be limited by staff capacity gaps and limitations in the existing institutional structure of MGNREGS. It recommended the appointment of programme officers to act as dedicated coordinators at the block level, and that cluster-level facilitation teams (CFTs) be set up to provide detailed technical planning support to groups ('clusters') of gram panchayats at the sub-block level, mediated through local community institutions.

In 2013, the MoRD incorporated the CFT concept into a pilot programme intended to improve the quality of MGNREGS assets by strengthening the MGNREGA planning process in 207 blocks across nine states (Desai et al., 2015; MoRD, 2019). These were some of India's poorest blocks, with a high proportion of landless agricultural labours, SCs, STs and other vulnerable groups. Rather than working with IWMP, CFTs worked via formal convergence with another national rural development programme, the DAY-National Rural Livelihoods Mission (DAY-NRLM). Working in convergence with the NRLM⁴ brought the benefit of experience of working with community institutions for the rural poor, such as women's SHGs and other community-based organisations, as well as a focus on building sustainable livelihoods.

The CFT programme model allowed states to contract CSOs with experience of working with NRM or IWMP to manage small teams of experts who served as a technical secretariat for groups ('clusters') of gram panchayats, liaising closely with community institutions to increase social participation. Each CFT covered

³ Since 2015 the numerous circulars and other advisory documentation relating to MGNREGS have been bundled together with the operational guidelines to produce a consolidated Annual MGNREGS Circular.

⁴ The National Rural Livelihoods Mission (known as DAY-NRLM since 2015) is a distinct national rural development programme that focuses on social mobilisation, financial inclusion and livelihood enhancement. It works by supporting and building the capabilities of local institutions for the poor and marginalised. See Table A1 for a list of national rural development programmes that MGNREGS can pair with.

a mini-watershed, or an area equivalent to roughly 15,000 hectares. CFTs consisted of three or four thematic planning experts, for example, a civil engineer, an NRM expert and a livelihoods expert (MoRD, 2019). The teams' specific remit was to facilitate the production of an integrated watershed plan for each gram panchayat using a participatory process, with a particular focus on women and marginalised groups (MoRD, 2019; MoRD, 2018; Sagar District, SRIJAN, nd). The roles also aimed to build the capacity and understanding of MGNREGS and DAY-NRLM functionaries and local government representatives in relation to their roles and responsibilities within MGNREGA, and to ensure that NRM works constituted 65% of the total.

The CFT programme ran from 2014 to 2019, but after 2018 it was discontinued in all states except Jharkhand. While there is no official assessment of CFT; it is reported its success was undermined by a lack of sufficient stakeholder and functionary engagement, together with a dearth of suitable CSO partners and capabilities in many states (MoRD, 2019). It was replaced in 2019 by the Cluster Facilitation Project (CFP), which had similar aims: convergence with NRLM to achieve rapid poverty reduction objectives in prioritised blocks⁵ through better coordination, planning and implementation of MGNREGA works and more effective community liaison with marginalised groups (MoRD, 2019; 2020). The most notable differences are CFP's emphasis on the importance of technology (INRM planning using GIS) and the creation of teams of thematic experts nested at multiple scales (cluster, block, district, state and national) to help with the planning, monitoring and delivery of the MGNREGS plans. These experts could be recruited directly by the states without using CSOs as intermediaries.

Each cluster-level CFP team consists of an NRM and a livelihoods expert, with a maximum of four cluster teams operational per block at any given time. Each block also has a dedicated GIS expert who is responsible for overall coordination between the teams. Activities for teams at the block level include completing a comprehensive GIS plan for MGNREGS for each gram panchayat, in accordance with INRM principles (known as 'saturation mode'). Under CFP,⁶ each team's mandate is to ensure the MGNREGS GIS plan is integrated into the gram panchayat's workplan, with implementation of the plan expected within 18 months. Once completed, the teams are expected to repeat the process in a different block – until all blocks are treated or until 'saturation' is reached in the district (Uttar Pradesh State, 2020).

To this date, there are no known reviews of the effectiveness of CFP at this time, and COVID-19 will have severely impacted the scheme's delivery.

Mandating convergence with other key programmes

Since the early days of MGNREGS, formal modalities of convergence (see Box 4) between different national programmes and sectoral initiatives (see Table 1) have been developed and trialled, resulting in a large number of convergence possibilities. MGNREGS is an attractive convergence partner for many different rural

BOX 4. CONVERGENCE

Convergence is the term for coordination and cooperation between different line departments or government initiatives with similar or complementary objectives. With MGNREGS, convergence takes place at the district level and can work in a number of different ways:

- Funds may be made available from other schemes to meet the cost of an identifiable part of a project, resulting in enhanced durability of the assets created with MGNREGS funds.
- Funds can also be made available from other schemes to support livelihood development through the use of the asset created using MGNREGS funds.
- Another line department, ministry or programme can provide technical inputs for a MGNREGA programme – either in terms of supervision by technical staff during work execution or design or capacity building for assets under MGNREGS for livelihoods (MoRD, 2019).

Convergence requires identifying opportunities for sharing funding and expertise at district level through joint planning. This enables convergence to create a unified operationalisation approach for the different programme and departmental plans instead of operating in silos.

MGNREGS can also converge with other rural development programmes that are not associated with natural resource management. Table 1 presents a list of some common convergence partners for MGNREGS.

⁵ Blocks targeted by CFP belong to the 'Aspirational Districts Programme' (NITI, 2018). This includes 117 districts across 28 states which perform badly on selected socioeconomic indicators.

⁶ CFP also sets up teams of thematic experts at higher levels: at the district level, an NRM and a GIS expert, and at the state level, an NRM, GIS and a livelihoods expert.

development programmes — as an on-demand national employment guarantee scheme, it potentially brings substantial new inputs into state and district budgets.

Convergence modalities between the IWMP and MGNREGA were first set up in 2009. Yet, it was only in 2016 that convergence planning according to IWM principles became formally mandatory for MGNREGS through the Mission Water Conservation framework (MWC) (MoRD, 2016; MoRD, 2017b). This requirement represented a step towards full endorsement of IWM and INRM as the main guiding principles behind MGNREGS planning.

MWC (which is ongoing) aims to promote INRM by making convergence compulsory between the three different government rural development planning programmes which have similar, water-related natural resource management objectives: MGNREGA, PMKSY and IWMP. INRM is to be achieved by pooling the expertise and resources of different programmes, facilitating a more holistic consideration of resource use (land, water, vegetation/forests, livestock, fisheries and so on) within watersheds. The IWMP contributes both a devolved institutional architecture for coordination, coherence and monitoring, and teams of technical watershed experts and professionals embedded at every level. It also contributes a portfolio of completed and ongoing watershed projects, which includes completed ridge-to-valley treatment plans. However, as noted above, funding for IWMP is progressively being scaled back, and it is unclear how MWC can achieve

its objectives without the distinctive capacities of this convergence partner.

The MWC framework is a sub-component of the wider MGNREGA institutional set-up, targeting only the 2,129 most water-stressed blocks of the country. These are blocks that suffer from over-exploited or critically low groundwater levels or face a shortage of surface water for irrigation and are especially exposed to the impact of current and future climate change (MoRD, 2020). The MWC requires recognition of the differentiated planning requirements of different agro-ecological zones. It also marks the first time there was a clear climate change and climate resilience focus within MGNREGS — see Box 5 (MoRD, 2017b).

Putting climate resilience at the forefront of assets planning

Infrastructure for Climate Resilient Growth in India (ICRG) is an ongoing pilot programme run by the UK's FCDO. During Phase I (November 2016 — March 2020), the programme aimed to demonstrate how an explicit climate resilience focus can be brought into INRM-based asset planning within existing MGNREGS processes. Phase I was delivered in partnership with MoRD, Gol and the states of Bihar, Chhattisgarh and Odisha, and was implemented in 103 blocks between 2016 and 2020 (ICRG, 2021; IPE Global, 2019).

ICRG aimed to introduce a medium- to long-term climate resilience focus to MGNREGS planning by using climate risk assessments, informed by long-term

BOX 5. PATHWAYS OF CHANGE TOWARDS CLIMATE RESILIENCE UNDER MGNREGA

Climate resilience is one of the three principles guiding MGNREGS planning under the Mission Water Conservation (MWC) framework introduced in 2016, the others being INRM and inclusion (MoRD, 2017b). Ridge-to-valley watershed planning, soil and water conservation, and water budgeting are all seen as fundamental for preparing for climate change in the water-stressed blocks targeted by MWC. But works and assets that create new livelihood opportunities and diversify away from a climate-sensitive agricultural base are also seen as essential to avoid maladaptation.

Comprehensive, consolidated implementation guidelines for mainstream (ie not only MWC) MGNREGA in the form of an annual circular have been issued since 2015, but climate change was not mentioned as a higher-level focus until 2019–2020 (MoRD, 2019; 2020). Assets built under the scheme are expected to address the challenge of climate change through *“increased water availability for irrigation, groundwater recharge, increased agricultural production, and carbon sequestration.”* Climate resilience is expected to be achieved principally through the construction of public works relating to natural resource management and integrated watershed management approaches (Category A works), and that resilience is to be assessed (at least partially) in terms of the durability of the assets constructed.

Both the MWC framework and recent guidelines recommend that planning make use of historical and projected climate change data (especially the incidence of droughts and floods), together with vulnerability assessments at the district, block or gram panchayat levels. There is, however, no nationally available guidance on how this should be done (that we are aware of).

climate projections, conducted at the block level to design contextually relevant, tailored packages of MGNREGS assets and interventions for the villages in the block (called climate resilient works, or CRWs). Still following the basic principles of ridge-to-valley, CRW included detailed designs of future climate-proofed MGNREGS assets and activities (such as plantation and soil bunding for additional groundwater recharge) which were then introduced during participatory planning processes with elected gram panchayat officials and recommended for inclusion in the annual 'shelf of works'.

While the programme involved community mobilisation and sensitisation on climate change, the greatest focus was on building the capacity of MGNREGS functionaries at the district, block and community level, helping them with the conceptualisation, design, planning and execution of the CRWs. ICRG staff promoted classic watershed principles such as 'ridge-to-valley', but they also introduced new digital technologies and science-based approaches for selecting, designing and planning MGNREGS assets, including the CLART (Composite Land Assessment and Restoration Tool) and Q-GIS. Formal village planning documents were required to provide much more detailed scientific information about how the CRWs would contribute to climate resilience. Planning documents such as the Detailed Project Reports described how assets were expected to contribute to local livelihoods, and were used to inform decision making during the annual MGNREGS planning process, and assessment (IPE, 2019).

Evidence for MGNREGS performance over the years

This report has traced an overview of the evolution of modifications to MGNREGS at the level of policy and institutional organisation. This overview provides an informed commentary on the ongoing performance of MGNREGS assets or the effectiveness of the various

policy and institutional innovations over time. There have been national evaluations of the programme, but there are limited evaluations of resilience outcomes from MGNREGS assets over a large scale or long periods of time. Further empirical and forensic analysis of the outcomes at different stages of MGNREGS's evolution would be required to comment on the performance and the effectiveness of different policy innovations over time.

There are wide-ranging reports of biophysical and associated socioeconomic benefits being delivered by MGNREGS assets, but these are mostly anecdotal, informal or project-related accounts. Only a limited number of studies have attempted to make a comprehensive attempt to link these biophysical and socioeconomic benefits to resilience to climate change variability and extreme climate events (Adam, 2015; Kaur et al., 2019; Steinbach et al., 2017), or to summarise the potential contribution of MGNREGS natural resource management assets via the local biophysical benefits they deliver (Esteves et al., 2013).

Two studies provide evidence relating to DFID India's ICRG programme, which supplemented traditional MGNREGS planning processes with supplementary climate risk management tools, guidelines and processes (IPE Global, 2019; Sambodi and WOTR, 2020). However, the ICRG programme evaluation still assessed impacts over a relatively short time period, which is problematic because livelihood and resilience benefits from assets under MGNREGS can take time to unfold (IPE Global nd; Ludi et al., Forthcoming; Sambodhi and WOTR, 2020). Insights from these studies relate to operational and institutional challenges in the implementation process which resulted in failure to achieve the desired short-run programme outcomes. These challenges highlight the problems associated with privileging technological solutions that lack due regard for the social, institutional and policy context within which they might be adopted.

3

MGNREGS in practice today

A review of the legal, academic and practitioner literature shows an increased integration of IWM principles into MGNREGS guidance as the scheme evolved. With policy priorities moving from IWMP towards irrigation under PMKSY, this leaves MGNREGS as the main, if not only, Indian programme that embeds IWM as a recommended approach by which to plan, design and implement community assets for resilience.

The following section reports results from multi-stakeholder interviews about the challenges and best practices for implementing MGNREGS across Rajasthan, Madhya Pradesh and Uttar Pradesh, including current challenges. To capture the realities experienced at different stages of the implementation of MGNREGS's policy for the creation of assets and related resilience outcomes, we spoke to ten national and state civil society practitioners, 14 government actors at state, district and block levels, along with three international experts. While the experiences vary between – and within – states, the insights they offer are nonetheless relevant more broadly and transferable to other states.

MGNREGS assets realised in the three states examined for this report are primarily focused on water and soil conservation, especially in areas of water scarcity. Depending on location, MGNREGS also contribute to livelihood projects. Most block and district officers recognise the need to understand the watershed's parameters through GIS and localised mapping. Asset types and designs are based on rainfall, location of

water bodies, hydrology and aquifer recharge, among others, primarily following a micro-watershed, 'ridge-to-valley' approach, using GIS and mapping. As such, MGNREGS builds structures that address water scarcity. While there are examples of successful implementation of IWM under MGNREGS, most of the asset creation falls short of showing an integrated resource or watershed management approach.

3.1 Challenges in implementing MGNREGS

After over 15 years of implementation, MGNREGS has developed a complex structure to select and create assets for providing labour in rural areas. As outlined in Section 2, MGNREGS is designed to respond to the priorities of vulnerable, rural populations in rainfed agriculture areas. Unsurprisingly, respondents highlighted that priorities of the rural poor in arid and semi-arid areas remained focused on building structures for soil and water conservation, drinking water, and, at times, additional livelihood and capacity-building projects.

There is often nothing new or special when it comes to building the resilience of poor Indian people. They face a scarcity of water and must rely on water structures as the only viable option to address this scarcity. – Block-level official, Barmer, Rajasthan

Since the publication of the Committee Guidelines in 2012, followed by the MWC framework in 2016, guidelines have increased the focus on improving resilience through asset creation; however, a lag remains between the national guidelines and the practical implementation of MGNREGS. While respondents showed an understanding of IWMP principles and approaches, they point to ongoing challenges that prevent a more cohesive asset creation process. Five key areas of challenges have been highlighted, relating to logistics, technical constraints, coordination, capacity, and social inclusion and participation.

Logistical challenges point to the timing and resourcing of inputs and outputs in the asset creation cycle, affecting labour availability and thus asset building itself. MGNREGS intends to supply work during seasonal periods to respond to employment and livelihood scarcity rather than providing a source of constant income. While providing 100 days of labour per year to households across India is no small feat, the number of days are too low to secure a household's livelihood. This means that, when possible, people are looking elsewhere for work that is continuous over the whole year.

Wage payments are often delayed, discouraging subsequent demand for work (Narayanan et al., 2017). Male members of the family often migrate in search of more stable, better remunerated and more certain jobs. Female family members are left in villages as available labour, but their availability is limited, given that they often already shoulder farming and household responsibilities. Additionally, the wages offered under MGNREGS can be lower than market rates in several states: the average wage rate per person under MGNREGS in 2021–22 stands at 207 rupees per day, compared to 250–300 rupees on the open market (MoRD, 2021b). All this means that the labour supply for MGNREGS assets can be insufficient, irregular and subject to seasonal fluctuations.

In practice, less labour is available than the full population since men migrate to other states for jobs that guarantee wages for 12 months. The primary requirement of people is for continuous employment throughout the year rather than a limited 100 days. Wages are not the primary concern of people; continuity is.
— District-level officer, Madhya Pradesh

In addition, material deliveries are often not completed on time due to administrative bottlenecks in sending resources down to the block level. The quality and the timely construction of assets in turn suffers from these delays. For example, delays hamper the creation of

key water structures prior to the rainy season, limiting the resilience benefits. Delayed or partially completed projects lose momentum, and communities become disillusioned, especially when the assets involve time-sensitive integrated livelihood activities such as plantation and orchard initiatives.

Technical challenges also hinder the sustainability and resilience potential of assets. This is linked to a lack of resources for capital inputs (materials) and a lack of technical inputs for design and implementation. A key rule of MGNREGS stipulates the proportion of spending between wages and materials for assets: 60% of expenditure must be spent on wages and 40% on materials. This rule hampers the use of more expensive materials — such as cement — which could give assets greater durability and resilience to climate shocks. In fact, several respondents referred to MGNREGS's assets as temporary structures, as opposed to permanent and sustainable ones. Additionally, planning for renovation and maintenance of the assets is often omitted, with the result that assets become decrepit after a few years.

While MGNREGS guidance sets out the need for robust above- and below-ground mapping of resources, respondents revealed that creating structures based on adequate calculations was still a challenge. Too often, the assets created will have over- or underestimated the volume of water available in the watershed, or misjudged the location of the asset in reference to the topography, thus rendering the assets only partly functional at best. This may be why recent MGNREGS guidelines increasingly emphasise the need to use technologies such as Earth Observation and GIS.

There are still basic design problems plaguing the creation of MGNREGS assets. For example, the depths of the drains are not calculated well all the time. Good technical design is the basis for providing water sustainably; we need to get that right. — Block officer, Uttar Pradesh

Coordination challenges refer to the limited coordination of functions and systems and the related structures to implement an integrated planning process. Since the introduction of the Shah guidelines in 2012, the central guidelines do promote and encourage integrated planning. The MWC framework formally mandates integrated planning and formal coordination between departments in the pursuit of these objectives. Despite this, there is limited awareness and a lack of motivation for working outside silos, for going beyond 'business-as-usual' approaches and coordinating between departments and levels.

Earlier MGNREGS assets were limited to the digging up and subsequent refilling of trenches to ensure that 100 days of employment was provided for people. This was not leading to any useful output from the MGNREGS; there were no clear objectives or planning. Now, discussions on the type and design of the asset are starting to happen – but coordination is often not easy between departments with different visions. District-level official, Madhya Pradesh

Local political priorities and clientelism further deter good coordination. It is not uncommon for the same labour to be subscribed to multiple projects across different departments (Maiorano et al., 2018). At the state level, there is no statutory compulsion to accept the imposition of IWM or climate resilience goals upon the objectives of MGNREGS; this is at the discretion of state governments. For example, trends between 2014 and 2018 in Rajasthan, Uttar Pradesh and Madhya Pradesh suggest that the MGNREGS assets were overwhelmingly focused on the construction of private housing, using labour as inputs to the Indira Awaas Yojana (IAY) or Pradhan Mantri Awas Yojana (PMAY) national schemes.

This lack of convergence at the point of implementation highlights a key tension in MGNREGS: while asset planning must take a landscape perspective to follow IWM principles, this is inconsistent with the main implementation actors being local-level gram panchayats. Maintaining an integrated perspective across the lowest levels of the Indian devolved administration system and inclusively engaging local communities in the planning of assets requires time, resources, and experienced engagement expertise.

A lack of capacity and awareness are hindering convergence. The lack of integrated planning at the point of programme design and delivery is not unexpected, given the gaps in capacity at operating agencies. MGNREGS provides labour and a nationally devolved structure, but it does not provide guidance nor stipulate how institutions should implement it. Despite the guidelines' focus on integration, most members of the MGNREGS ecosystem at state level or below, from MGNREGS functionaries, technical staff and engineers and gram panchayat elected officials to individual households and community members, have little or no knowledge of watershed or INRM principles and the benefits of following them.

Capacity and mechanisms for integrating expert knowledge into coherent plans, managing technological but also community involvement and for the integration of climate risks into planning required for IWM remain difficult to access, especially when it comes to attracting skilled experts to poor, rural areas. Respondents agreed that even under CFP guidelines, staffing full CFTs with mandated expertise across soil and moisture conservation, agriculture and livelihoods, community mobilisation and technical engineering was rare. MGNREGS functionaries and civil society practitioners lack the time and knowledge to add additional tasks to their schedules – and those who are trained are likely to change roles and departments as soon as promotions are possible (MoRD, 2019).

Capacity building is the best way to prepare for and survive extreme climate changes. Anyone who is directly involved in managing, planning and implementing MGNREGS works should be trained on climate change and ridge-to-valley. – Block officer, Uttar Pradesh

While most respondents were aware of the technical requirements of traditional watershed management approaches, and even of IWM, they reported that few colleagues shared the same level of understanding, especially when considering further devolution of responsibilities to the gram panchayat. The lack of awareness within the community and their elected representatives leads to a failure to understand the potential benefits for livelihoods and for climate resilience that MGNREGS could offer in the form of integrated natural resource planning. This, in turn, can translate into a lack of demand for INRM assets during the participatory planning process at the village level.

Social inclusion and community participation are still not systematically part of the process despite being stipulated in MGNREGS and CFP guidelines, limiting the resilience benefits currently delivered. Community participation is needed to ensure the assets meet local resilience priorities, rather than assumptions about what communities need. It increases community ownership of the structure created, and high community involvement throughout the planning process has often translated into higher-quality creation and ensuing maintenance of structures (Sambodhi and WOTR, 2020). Creation of SHGs, training of community mobilisers and collaboration between state officials and CSOs is sometimes undertaken, but only haphazardly. As such, community awareness of the need for, and demand for, local assets to improve resilience remains low.

There is often little engagement by the community with the annual planning process itself: not all village households participate in gram sabha meetings, and young men have often left the village to seek work. Households report that their preferences are not reflected in the assets that are selected for construction under MGNREGS. Local village institutions often become little more than mobilisers of wage seekers, while line departments decide priorities and compete for funding at the district level.

Often people do not attend gram sabha, as they do not see the short-term [monetary or] material benefits. Gram panchayat need to better communicate why and when MGNREGS is discussed. – District officer, Jodhpur, Rajasthan

This contrasts with traditional watershed plus project approaches, where the sensitisation and education of the local community, together with the use of participatory planning tools such as vulnerability assessments, start with the help of CSOs several months prior to the actual construction of assets. Respondents pointed to the lack of time and resources to build each asset as a main barrier to community engagement. Even when collaboration with expert NGOs could be established, state authorities often find it more beneficial to keep the funds rather than outsource the work. This can result in community engagement falling between the cracks. Another reason for the lack of social inclusion in asset planning is linked to limited livelihood generation by projects. While IWM approaches and MGNREGS guidelines mention the importance of the 'plus' under watershed approaches, MGNREGS asset delivery does not always include livelihood generation activities.

Aiming to target the most vulnerable, different castes and social groups are prioritised under MGNREGS – notably SCs, STs and households beyond the poverty line (BPL). While this approach can target the most vulnerable, it entails that benefits at the community level are limited in favour of some individuals or groups, which can also create conflict within communities.

Evidence and learning challenges refer to the lack of a systematic cycle for MEL. MGNREGA mandates a framework for undertaking monitoring and evaluation; however, this is monitoring-heavy and allows little space for learning and adaptive management.

MGNREGS plans the devolution of MEL through the formation of statutory bodies and committees, from central government to village monitoring committees (MoRD, 2021a). Guidelines include several monitoring activities: field visits by block and district officers, mainly during the construction of the asset for quality control

and maintenance of the works, geospatial assessments and social audits. However, the implementation of monitoring activities varies per location, the motivation of government staff and of the communities themselves (Vij, 2011). For example, social audits are mandatory post-implementation exercises for all projects at least once every six months, but monitoring activities are rarely maintained after a few years (Lakha et al., 2015).

Performance is measured by key output-level metrics across the country and aggregated on the national MGNREGA Management Information System platform. This allows oversight of indicators such as the number of job cards are issued, the number of households provided with employment, category of households employed, and the type of works undertaken, among others (Porras and Kaur, 2018). However, the monitoring does not include metrics on livelihoods, resilience and wellbeing – let alone subjective indicators of how MGNREGS's assets have affected people's lives.

While the government holds programme evaluations at sporadic times, such as the 2011 review that brought the Shah Committee Guidelines in 2012, there is no stated evaluation cycle implemented. This means understanding the performance of each policy and design evolution of MGNREGS is not systematically done. To date, the scarce evidence about the long-term impacts on people's livelihoods and resilience and surrounding ecosystems of MGNREGS – and of social protection programmes in general – makes it difficult to achieve a consensus on the effectiveness of assets or improve ineffective features (Ludi et al., Forthcoming).

3.2 Best practices for climate-resilient planning under MGNREGS

Despite these challenges, several national, state and local-level authorities and CSOs have worked to implement a IWMP approach through MGNREGS, with an increasing focus on building resilience to future, as well as current, climate variability. Interviews with key stakeholders highlight a series of best practices for planning MGNREGS assets for improved resilience through an IWMP approach. Eight key best practices are summarised here. These derive from both international experience and the Indian experience (NABARD, 2016; National Rainfed Area Authority, 2011).

The best practices revolve around the following eight areas: coordinated planning, scale, technical planning, water budgeting and management, community engagement, livelihood integration, MEL, and climate risk integration.

I. Coordinated planning

Planning for INRM at multiple scales needs to be backed with multi-stakeholder institutional architecture, from local to state levels, to ensure coherence and integration. This institutional architecture should provide clear policy coherence, direction and guidance that prioritises INRM and climate resilience as higher order aims (at all scales, especially the state level), monitors progress against objectives, and provides a system of incentives, rewards and sanctions depending on performance.

IWMP introduced a multi-scalar architecture of technical and project management support for watershed projects, and CFP aims to do something similar with a particular focus on GIS. The concept of nested supporting institutions at different scales should be widened to include multi-stakeholder fora, with a particular emphasis on the inclusion of CSOs at higher levels (not just the community level). This will promote vital communication, coordination and monitoring functions between scales (village, district, state). This institutional architecture is at least partially responsible for the reportedly successful scaling up of the Ushar-Mukti and mega-watershed projects (see Box 5), where a CSO presence ([Professional Assistance for Development Action – Pradan](#)) was integrated into a dedicated MGNREGS Project Management Unit for IWMP at the state level.

To achieve INRM within MGNREGS, a comprehensive multi-year plan⁷ is needed at the district level and integrated planning should be achieved through strategic convergence with the relevant line departments and government missions. Especially important (but often excluded) is the Forestry Department, whose cooperation is needed to treat many of the watershed ridge areas. Ideally, convergence partners should also move beyond IWMP and PMKSY to include a range of resilience-building initiatives that can promote sustainable, diversified livelihoods.

The planning system should also recognise the distinctive skills and capabilities needed for a successful INRM programme at multiple levels, allocate these functions to specific actors (for example CSOs, CFT teams, MGNREGS technical staff, district collectors and programme coordinators), fund them adequately, ensure they have adequate capacity to complete these tasks, and situate them within a clearly defined institutional architecture.

II. Scale: planning beyond micro-watershed catchments

Early watershed projects in India initially focused on the micro-watershed (less than 500 hectares, see Box 1). Although working at this scale is a convenient and very intuitive unit of intervention, planning and governance at this scale can be maladaptive for climate resilience from an ecosystems and landscape perspective (Shames and Scherr, 2019). Micro-watershed planning does not take into account the interconnected and interdependent nature of biophysical or socioeconomic interactions between the upstream and downstream areas of a river basin. Nor does it take into account the fact that groundwater levels (which are arguably more important for climate resilience than surface water) depend on underground aquifers which may span multiple watersheds (Darghouth et al., 2008; 2009; James et al., 2018; Smyle et al., 2014). It also may not correspond to the administrative units of local government, increasing problems of effective planning and coordination.

As common watershed guidelines in India have evolved, watershed management programmes have progressively increased their preferred scale of operation to groups of contiguous micro-watersheds catchments (called 'clusters') which are linked by a common aquifer, similar biophysical and socioeconomic systems or highly coupled systems of water use. Nationally, the IWMP 2011 guidelines recommend an average cluster size of between 1,000 and 5,000 hectares (GoI, 2011). CSOs such as Watershed Organisation Trust ([WOTR](#)) and Action for Social Advancement ([ASA](#)) now prefer to work at the scale of the sub-river basin (between 20,000 and 25,000 hectares, or between 20 and 50 villages). Since 2018, state-sponsored watershed-based initiatives such as Ushar-Mukti in West Bengal have even begun working at the mega-watershed level, covering multiple river basins over an area of 500,000–600,000 hectares (see Box 6).

Higher scales of operation permit governance at levels that suit the dynamics of ecosystems, and can offer significant operational economies of scale. However, they bring with them significant challenges in terms of collaboration and coordination (Blomquist and Schlager, 2006).

⁷ IWMP recommended an ideal watershed project duration of four to seven years, consisting of three distinct stages at the local level: preparatory, works and consolidation (National Rainfed Area Authority, 2011).

BOX 6: USHAR MUKTI ('FREEDOM FROM DROUGHT'): A MEGA-WATERSHED PROJECT IN WEST BENGAL

This is an example of a state-sponsored, multi-scalar, multi-stakeholder governance architecture for delivering integrated watershed development objectives through MGNREGS. In 2017, a formal agreement was signed between the West Bengal MGNREGS office, seven CSOs, including Professional Assistance for Development Action ([Pradan](#)) – acting as lead CSO – and the Bharat Rural Livelihoods Foundation ([BRLF](#)),⁸ with the aim of achieving landscape-level watershed development and planning in 54 drought-prone blocks in West Bengal. While the project targets areas vulnerable to current climate shocks, there is no specific focus on climate change.

Planning, coordination and effective policy coherence takes place at multiple levels, from the state down to the gram panchayat level. A lead CSO (Pradan) is embedded in structures at every level to assist with monitoring, feedback and coordination across levels of government. At the state level, a dedicated project management unit has been set up in the MGNREGS office of the Department of Panchayati Raj and Rural Development to provide institutional direction, ensure policy momentum and promote convergence. District-level committees are essential for planning and ensuring convergence, which is critical for moving beyond basic soil and water conservation to trigger growth in livelihood activities (eg climate smart agriculture, cropping systems, marketing support, forestry). At the gram panchayat level, CSOs primarily provide technical support and capacity building to assist with the development of five-year detailed project reports designed along watershed development principles and explicitly tailored to MGNREGS programme structure; they also assist with community engagement and mobilisation (Kulkarni, 2020).

The system reportedly works well because of its nested, multi-scalar architecture, which promotes integrated landscape planning because each of the trio of actors – CSOs, BRLF and government – complements the others, and because the state is committed to using MGNREGS in this way. The CSOs bring experience of community participation and engagement and implementing watershed projects at the village level. BRLF channels the financing for the CSOs, bringing in corporate social responsibility and private philanthropy donations in addition to funding from government sources. It also provides capacity building for watershed development and facilitates communication between scales. MGNREGS provides the framework within which the watershed programme can be delivered: a well-funded, centrally financed labour supply that can be matched with a variety of convergence opportunities. While no independent empirical studies on outcomes have yet been conducted, anecdotal reports from within the programme suggest that the initiative has had some success (BRLF, 2019). State-level commitment to using MGNREGS to achieve watershed objectives is fundamental to this, both in terms of ensuring convergence at the district level and in providing assurance that integrated watershed projects will be prioritised through MGNREGS works.

The mega-watershed model is now being tried in other states. It was launched in Chhattisgarh in 2018 (with Pradan again the lead CSO and BRLF providing the funding). A similar programme was launched in Jharkhand in 2020.

III. Technical planning: ridge-to-valley treatment, GIS and scientific planning

For decades, Indian policy has been promoting GIS systems that can provide a wealth of increasingly accurate scientific data to provide decision support to a wider variety of users. Using 'layers' of information; such technological systems can integrate and make accessible data from many different sources based on the physical sciences (eg remote sensing, soil analysis and hydrological modelling), socioeconomic survey

data and participatory methods. These sophisticated databases and mapping tools can be very useful in providing decision support for building resilience, for example, the World Bank Sojala watershed Land Resource Inventory (LRI) database mapped and recorded hydrology and soil types down to the field level, which allows farmers to make informed crop selection decisions tailored to their own specific needs and risk profiles with regards to climate changes. (Hegde et al., 2018)

⁸ BRLF is an independent society under the MoRD, aiming to help scale up civil society action in partnership with central and state governments. BRLF aims to better channel funds allocated by governments, banks, corporates and other philanthropic foundations for various public programmes and ensure their proper use at the grassroots to generate the best results.

Within MGNREGS, GIS watershed plans are preferred deliverables for technical staff working for the CFP scheme (MoRD, 2019) and are required for watersheds covered by the Mission Water Conservation framework (MoRD, 2020). GIS systems are typically used to support a ridge-to-valley analysis of the watershed, helping to identify the optimum location of physical assets and infrastructure with the aim of selecting appropriate interventions and siting them for maximum hydrological impact.

It must, however, be remembered that these are decision support *tools* that need to be embedded within a wider participatory framework of decision making. While the systems may offer an unprecedented level of integrated information, there is always the risk that this encourages entrenched habits of top-down decision making through digital exclusion. Efforts must be made to ensure that insights from GIS systems are not only accessible to the community but also that they can be fully integrated into participatory decision-making processes. For example, this can be done with through the development of mobile applications that can access the underlying database, and through systematic community engagement, making full use of the capabilities such tools offer. An example of this is the CRISP-M tool (Climate Resilience Information System and Planning Tool for MGNREGS).⁹ Funded and piloted under Phase 2 of the ICRG programme, CRISP-M is a multi-platform web and mobile phone-based GIS tool to support planning, implementation and monitoring of MGNREGS (Bharadwaj, 2021). Currently undergoing field trials, it helps communities conduct participatory vulnerability assessments and ground truth, update and prioritise assets based on the local GIS plan and on their own lived experience and needs. It also provides transparency and accountability through real time monitoring and reporting on the status and performance of MGNREGS assets.

Unlocking the transformational potential of participatory GIS also means expanding the range of information stored in GIS databases beyond the 'scientific' support information needed for an accurate ridge-to-valley analysis. As with participatory digital mapping used as part of the DCF programme (DCF Alliance, 2019), maps can be a useful way of recording indigenous knowledge, resilience strategies and livelihood preference, and can facilitate dialogue between communities and planners where resilience is discussed in more holistic terms – not simply in terms of promoting soil and water conservation solutions.

Holistic resilience is best achieved where MGNREGS works effectively in convergence with other schemes; hence GIS systems need to work

to support convergence between departments and integrated planning at different scales: they should facilitate discussion and joint planning between multiple stakeholders through a common platform. Standardisation, interoperability and simplified modalities of access prioritising community participation should be priorities.

IV. Equitable water management

For watershed management assets to build resilience, programmes to manage the demand for water and promote both efficient and equitable water use, with an emphasis on water security for all.

Farmers may be tempted to use additional water available through new assets to invest in lucrative, water-intensive cash crops which have an overall net negative effect on groundwater and the availability of drinking water and can encourage a maladaptive development pathway. To allow the recharge of aquifers and prevent groundwater depletion, the focus must be on demand management as well as enhancing the supply of water, by promoting water efficiency and climate smart agriculture. This includes encouraging the take-up of drought-resistant and less water-intensive crops through capacity building and providing increased market opportunities for the new options.

Demand management can be delivered by agricultural extension services or CSOs through support to individual farmers, or it can be scaled up to village level via collectively agreed water budgets which regard water as a public good and protect the water rights of the poorest and the most marginalised and socially excluded, as has been done in the WOTR's Watershed Stewardship Initiative (Kale and D'Souza, 2018). This is important both for social justice and for sustainability, otherwise, the linkages between IWM assets and resilience building will not be created or sustained in the long run (Ludi et al., Forthcoming; Smyle et al., 2014).

However, community governance of village water resources may prove challenging, and the appropriate scale for determining the budget may be the aquifer rather than the village. It is also important that IWM projects that increase the available water supply attempt to balance efficient water use against the equitable distribution of benefits to all members (of both upstream and downstream communities). Benefits should be shared geographically, as farmers in valley areas tend to benefit disproportionately from watershed interventions. Soil conservation structures in hilly ridges will not be maintained if those who live there do not benefit in some way from them.

⁹ CRISP-M is being developed by IIED, Madhya Pradesh Council of Science and Technology (MPCST), National Remote Sensing Centre (NRSC), Indian Meteorological Department (IMD), Indian Institute of Tropical Meteorology (IITM) and the Ministry of Rural Development.

V. Meaningful community participation

Meaningful community participation is essential in every aspect of the integrated watershed development project, including project planning and design, implementation, oversight, and monitoring and evaluation. Community engagement and buy-in are both socially just and programmatically necessary given the bottom-up, demand-driven MGNREGS village planning process. It is also essential for sustainability, as the community must value the assets created sufficiently to maintain them without additional MGNREGS funding. There are two major aspects to this theme: strong community institutions and capacity building at the village level.

Meaningful participation in governance can be encouraged by supporting and organising community-based, grassroots institutions that represent and advocate for the interests of local people, especially the most marginalised groups. These institutions include SHGs for women and landless labourers, savings and credit groups, user and producer groups, and village watershed committees. These institutions may already exist within communities as a result of other government programmes, such as DAY-NRLM or IWMP. They can provide a foundation for inclusive, participatory processes at all stages of a watershed intervention and should be empowered to play a full role as partners in MGNREGS governance processes alongside technical staff and functionaries.

Capacity building and sensitisation in the community is essential to build awareness of the benefits of INRM, entitlements under MGNREGS, the impacts of climate change, and the ability of the scheme to deliver integrated planning. Building the technical capacity of local people involves training them on GIS systems and digital planning tools. These systems need to be made accessible so that they can be incorporated into meaningful participatory planning processes that can integrate information from multiple sources. Furthermore, community participation and bottom-up planning need to be institutionalised into a planning process that promotes integration and dialogue between the strategic, higher-level integrated watershed management perspectives of government planners and the needs and priorities of local people.

We need to build understanding of climate change in communities, of how watersheds work and the links between the two. This way, they will be motivated to participate in choosing assets and developing new livelihoods. – Block-level official, Jodhpur, Rajasthan

VI. Promoting the ‘plus’ in watershed management

The physical infrastructure provided by a watershed development plan increases the amount of available water, but this is only the first step towards improving resilience based on the sustainable and equitable use of the additional resource. The plan should also focus on building sustainable livelihoods and promoting alternative, diversified and enhanced sources of income, paying particular attention to poor and marginalised groups such as the landless, small farmers, SCs and STs, women and young people. For example, The CSO Action for Social Advancement ([ASA](#)) has worked closely with communities in Bundelkhand on selecting novel and alternative cropping strategies, including combinations of vegetables, cash crops and fodder) with a focus on organic, nature-based farming. The approach goes beyond agricultural extension work and aims to integrate local producers into the agricultural supply chain by setting up farmer-producer organisations, magnifying their bargaining power in the market and facilitating access to credit and insurance (eg by promoting organic cotton and marketing to global brands (Bahuguna, 2019)). Such an approach can lead to transformational livelihood outcomes.

Horticultural schemes have great potential for development through MGNREGS; however, existing project designs favour larger farmers with more than one acre of land. The CSO Self-Reliant Initiatives Through Joint Action ([SRIJAN](#)) has been pioneering the use of nano-orchards with 50–60 plants (involving mango and pomegranate, intercropped with chilli) that can benefit smallholders and augment incomes (SRIJAN, 2009); SRIJAN is working together with Madhya Pradesh State to pilot this model for wider adoption through MGNREGS.

Since the release of the Shah draft guidelines (2012), MGNREGS has also permitted a wider range of assets that are not strictly watershed or agriculture-related but which can form part of a holistic, inclusive livelihood security focus (Category B assets – see p.19). These assets can support livelihoods based around animal husbandry and fisheries (for example, poultry shelters, goat shelters, fodder troughs) that can be taken up by landless and poorer households, thereby contributing to their livelihood security and resilience (MoRD, 2013b).

Finally, upland areas require a particular focus on livelihood development, as they benefit less from watershed-based interventions than valleys. Some form of benefit sharing (potentially in the form of transfers or payments for ecosystem services, within a micro-shed or across a cluster) may help to prevent seasonal migration.

VII. Reinforcing MEL

MGNREGS mandates several monitoring activities but only undertakes sporadic evaluations undertaken by experts. Improving long-term data assessments and allowing for learning cycles could improve the understanding of what works, for whom and how. Existing mandated monitoring activities include field visits, geospatial assessments and social audits, and are a good starting point. But the scope of information gathered under monitoring exercises must be extended to include contextualised livelihood and resilience proxies, for example, food security, livelihood diversity, personal agency and perceptions of wellbeing (Ludi et al., Forthcoming). Such indicators and a local MEL plan can be defined via community engagement activities at the beginning of the planning cycle, to be implemented by the village committee. This can increase local ownership in community assets, with ongoing local monitoring – and maintenance – unlocking further wage potential for communities.

MEL exercises don't need to be resource or time-intensive when added to strengthen existing systems, yet they can improve community participation and ownership in the assets created (DCF Alliance, 2019). For example, additional key questions can be added to field visits and to social audits. Holding separate assemblies for women, men, youth and other marginalised social groups can also give better evidence on the effect of MGNREGS on social relationships and community cohesion.

Better integration of data and information is needed at the district and state levels to leverage the wealth of data collected. This is where convergence and planning occur in the short and medium term. Without systematic evaluative processes integrated into the planning cycle, most data collected remains useless. MEL roles and responsibilities should be outlined and allocated clearly among MGNREGS staff, or allocated to the team of experts that support local authorities under the CFP, to ensure data is valorised and that insights generated can lead to improvements.

Lastly, ensuring there are mechanisms and platforms for learning could catalyse the performance of the scheme and inspire government officers and communities. This can include communicating results of evaluations in easy ways to practitioners, holding exchange visits between districts and blocks to share good practices, and having dedicated online platforms to share exemplars. Such annual evidence reviews and learning mechanisms can enable appropriate revisions to the annual Master Circular and help the scheme adapt to new circumstances in a fast-changing climate.

VIII. Integrating climate and disaster risks

Climate risk management needs to be integrated into watershed management planning processes, including vulnerability assessments at multiple scales and a systematic evaluation of current and future climate risks. While MGNREGS operational guidelines have recommended this since 2013, there is little documentation on how it should be done, and none of the Common Watershed Guidelines have provided specific guidance (Gray and Srinidhi, 2013). A number of different approaches have been tried in watershed programmes (not just MGNREGA).

Many of these have been based on the assumption that the best solution for addressing future climate vulnerability is to extend current watershed plus approaches. WOTR established a Climate Change Adaptation watershed project in 2009, with a suite of interventions in 53 villages in three states (Gray and Srinidhi, 2013). While the activities included an extension of the usual watershed plus approaches, they specifically explored improved climate information services (agro-meteorology), sustainable climate smart agriculture, biodiversity and ecosystem health, disaster risk reduction, agricultural livelihood enhancement (livestock, small-scale horticulture) and livelihood diversification away from agriculture. Meanwhile, NABARD runs a programme of 'climate proofing' activities for their existing watershed projects (NABARD, 2016). These involve enhanced soil and water conservation but also include conservation agriculture, weather-based advisory services, water budgeting, poly-hose cultivation and diversified livelihoods. CSOs such as SRIJAN promote climate smart agriculture, especially contextualised, seasonal crop diversification, as a key means of hedging against short-term climate risk.¹⁰ They also undertake rapid response, small-scale watershed infrastructure regeneration projects when drought is forecast or other concurrent, multiplier risks (such as COVID-19) are a threat.

These approaches have typically involved an adaptive, incremental and cross-sectoral approach to building resilience, based on current climate risks assessed through participatory methods, prioritising 'low regrets' measures and moving through iterative cycles of monitoring and learning. By contrast, the first phase of the ICRG programme (IPE Global, 2019; ICRG, 2021) explicitly focused on using long-term downscaled regional climate projects up to 2050 (derived from the CORDEX model) to influence the choice and design of appropriate 'packages' of MGNREGS assets as a way of building long-term resilience. The programme focus

¹⁰ More generally, the integration of climate smart agriculture and climate information services, for example, using the PICSA tool (University of Reading, 2021) – which has not been trialled in India – seems very promising.

was on training MGNREGS functionaries to customise these pre-selected climate-resilient designs using GIS systems and specially designed software.

While it is positive that the ICRG programme made a concerted attempt to prioritise climate risk management as a higher-order MGNREGS planning objective, the use of downscaled climate projections for selecting long-term adaptation strategies and designing assets at the local level is now considered problematic (Garcia et al., 2014) and can encourage maladaptive adaptation strategies and investments. The project design left little input for the community's lived experience of climate change (which is place-specific and may vary considerably from model predictions) in the selection and progressive evaluation of the performance of the assets constructed. While better specified project designs may be admirable, they do nothing to resolve the usual implementation challenges associated with working within the existing MGNREGS institutional framework.¹¹ ICRG Project implementation reports emphasised the need for improved convergence, including layering ICRG CRWs with additional agricultural and livelihood-based initiatives to demonstrate an immediate impact on rural

incomes. Greater system-level convergence was also recommended to ensure the ridge-to-valley approach was fully adopted, with a particular focus on the inclusion of Forestry Departments in integrated planning (Sambodhi and WOTR, 2020).

Rather than working backwards from specific projections, an emphasis on participatory scenario planning in the face of an uncertain climate future might lead to more robust, holistic planning outcomes, where assets are integrated into multi-sectoral convergent planning for resilience. The CRISP-M mobile tool developed by the second phase of the ICRG programme has the potential to support this, being able to access a sophisticated GIS database that can model the precise impact of various potential future climate scenarios on the local landscape. It will be important to develop genuinely participatory planning processes that successfully leverage the possibilities of the tool, allowing it to support robust, locally led climate resilience decision making; more critical will be institutionalising these processes and ensuring that informed community preferences are actually acted upon.

¹¹ Many of the challenges encountered echoed those reported by our key informant interviews, including a lack of policy coherence across scales and a lack of capacity among MGNREGS functionaries.

4

Opportunities to improve resilience under MGNREGS

This report provided a review of MGNREGS's evolution and design features to better understand the legal and conceptual framing legacies upon which the Indian social protection programme draws for improving the resilience of poor rural populations. Over the years, MGNREGS has integrated and reinforced guidance for applying an integrated watershed management approach to the creation of some of its permissible assets. This is a welcome evolution. Despite ongoing challenges, best practices have emerged from success stories, showing the possibility of improving the resilience of beneficiaries.

Where income guarantees can support short-term resilience to shocks, creating longer-term resilience through MGNREGS requires assets to provide pathways out of poverty, such as livelihood diversification and water and food security. Given that MGNREGS is primarily designed to provide sporadic income in times of shocks, there are inherent gaps and tensions stemming from the expectations that MGNREGS must, alone and systematically, deliver long-term resilience.

What are the practical opportunities to improve the climate resilience benefits of MGNREGS in the face of the increasing rate of climate shocks and changes? While the national Act provides little space for changes to the legislation, state- and district-level authorities have the power to prioritise and catalyse convergence, organisation and resilience under their jurisdiction. This section takes stock of the findings across the literature review and the interviews to highlight three main areas of accessible opportunities for changes that could drive the planning and creation of more sustainable and resilient outcomes from MGNREGS assets. We show that rather than a systemic change in how MGNREGS works, it is rather a change of perspective and behaviour from key institutional actors and decision makers that could be the key to delivering longer-term resilience from the assets created.

4.1 Expanding the focus from physical to social resilience

Funding resilient processes, not just outputs

The evolution of MGNREGS guidelines over the years has seen a gradual shift towards improving beneficiary resilience, slowly but surely integrating IWM approaches and adding a social component to the assets to be created. Given the challenges and best practices highlighted, improved resilience could be achieved by increasing the focus on processes for delivering income through asset creation. The existing 'labour only' focus is visible in the lack of attention given to resolving logistical challenges that prevent MGNREGS incentives from attracting sufficient labour – despite its objective of absorbing excess labour in seasonal cycles. It is also observable in MGNREGS's conceptualisation of resilience through the creation of physical infrastructure, rather than encouraging more social and participative processes that could help address the lack of employment opportunities in the long run. Revising the wage day rate to meet market rates would also support this.

Focusing on, and channelling appropriate funding to, delivery chain mechanisms to deliver assets could increase the quality of assets while helping to build better governance systems for their delivery. While at first, this may slow the number of assets being implemented, this could support finance capacity building, integration and coordination activities at state and district level – thus addressing the gaps in finance and resources that result from a lack of convergence. Ultimately, it would create resilient, sustainable systems for planning integrated assets rather than a series of short-term independent structures with limited benefits.

Practically speaking, this change could also be achieved under the discretion of state and district officials by specifying a certain percentage of the funding of MGNREGS assets to be dedicated to planning and coordination committees, communications, and MEL. For example, the devolved climate finance mechanism piloted in four arid and semi-arid countries in Africa creates a fund used by local authorities to invest in locally prioritised, climate-resilient public goods. Most (90%) of the fund is devoted to investments, but the remaining 10% of the fund supports the governance components of the mechanism (DCF Alliance, 2019).

Resilient processes could reinforce the planning of demand-led assets and community inclusion. Ultimately, increasing community ownership in the structures

created can save money by devolving responsibility for implementation to local groups. Giving funds to local groups helps with expenditure transparency and builds trust in the process, which can be complemented by household contributions for operations and maintenance. Social audits could provide evidence about the accountability of the governance, while the process is supported by the technical inputs and coordination of state and district planners.

The provision of wages to counter migration due to seasonal fluctuations in agriculture and livelihood activities is recognised as a way to improve resilience under MGNREGS but is not given sufficient focus. This is problematic, as it shifts the emphasis for achieving outcomes onto the technical aspects of building strategic assets, rather than emphasising both the assets and the delivery process. Improving processes – such as delivering wages in good time, and even improving wages – could also address the logistical challenges and lack of labour outlined above.

Encouraging the social dimensions of resilience

While resolving wage delays and wage rates could help improve local participation in the planning of assets and providing sufficient labour, another important concern is ensuring that the community derives enough livelihood benefits from assets. This report showed that local community participation is not systematically carried out.

It is now well evidenced that there are several dimensions of resilience beyond assets and livelihoods (Barnes et al., 2020; Beauchamp et al., 2019; Cinner et al., 2011). For example, knowledge and learning, social organisation and relationships, and agency are critical facets of improving individual, household and community adaptive capacities (Cinner et al., 2018). It is thus unnecessary for MGNREGS to only consider Category A works as suitable targets for climate adaptation pathways. Recognising the importance of social activities that ensue from assets, along with social organisation for the delivery and maintenance of the asset, could further improve community resilience.

This can be done by making the development of resilient livelihoods a priority at district and state levels and engaging with the community at all stages of asset planning. This means working with SHGs and grassroots institutions to enhance social organisation within the community. It also means proactively creating projects which enhance livelihoods, such as plantations that provide products to sell as well as preventing soil erosion.

Ultimately, creating new types of permissible asset for low-carbon and climate-resilient development could

promote social resilience in balance with ecological resilience. This could be agreed at state level, adding to the four existing asset categories. If possible, creating an asset category that does not rely on physical structures would be beneficial in areas where water and ecological limits have already been reached. For example, investments in social services, education, water and sanitation and security could further enhance resilience and complement asset creation.

Assessing differentiated impacts of MGNREGS

MGNREGS approaches such as CFP aim to target the most vulnerable populations. Yet, the impacts and benefits brought by MGNREGS must also be differentiated between different social groups within communities and between men and women. In fact, efforts for bringing targeted castes and social groups out of poverty may undermine other groups, pushing them into poverty.

With regards to gendered impacts, MGNREGS guidelines support gender equality in several respects (Vij et al., 2017). This includes mandating that at least one third of supported workers should be women and providing equal pay between men and women (Kar, 2013). Given that men are often the ones to migrate for seasonal work, MGNREGS also provide opportunities for a higher proportion of women to participate and gain employment. In fact, women represent 53% of the labour produced through MGNREGS in 2020–21 (Jordan et al., 2021). However, the time and labour demands required to fulfil the planned MGNREGS works can negatively affect women's capacity to create their own strategies for improved resilience. For example, women participating in building a well will benefit from using the well, but they may no longer have time to participate in local women's group meetings or develop social relationships with their neighbours. These trade-offs are particularly significant for female-headed households (Mersha and Laerhoven, 2018).

Tracking and assessing differentiated impacts of MGNREGS is important for enabling the scheme to adapt and evolve. Evidence to date points to the need to create longer-term livelihood security for women for them to truly benefit from MGNREGS (Jordan et al., 2021). While evaluations of the programme are conducted sporadically, reinforcing MEL guidelines to investigate the impacts of MGNREGS across social groups can avoid social disruption and long-term maladaptation. Such exercises don't need to be strenuous: they can involve disaggregated focus groups during monitoring visits by state and block officials, and integrate dimensions for closed discussions among

social groups during social audits by communities. It is important to maintain regular MEL exercises throughout the asset creation cycles and for years thereafter, as the impacts of MGNREGS and IWM can take several years to unfold (Ludi et al., Forthcoming).

4.2 Incentivising converging relationships

The availability of multidisciplinary teams that focus on convergence of MGNREGA and other schemes for effective implementation and utilisation of these schemes is one of the biggest opportunities for the success of the [MGNREGA] scheme. – National-level state official, MoRD

Articulating convergence opportunities clearly

MGNREGS stresses the need for convergence to successfully deliver its main objective – that is, income provision. Convergence between MGNREGS and other programmes is even more critical when it comes to successfully creating assets that can deliver long-term resilience. In other words, the creation of assets for resilience needs not only a coherence between the outputs of different delivery mechanisms, but also the resources to deliver assets of quality, build the capacity of officers and engage appropriately with communities.

In turn, this means the assets must satisfy the objectives of multiple programmes. While the task is administratively difficult, it in turn forces asset planning processes to take into account the multiple short- and long-term dimensions required to improve long-term resilience. For example, a water conservation asset would have to provide labour at times of need while working through self-help institutions and taking the livelihood diversification approach that is embedded in DAY-NRLM. Ultimately, MGNREGS provides funding for the realisation of some key factors (income and assets) to improve resilience, but creating positive long-term outcomes requires the alignment of a series of social, economic, technical and contextual factors. Those must be covered by other converging programmes.

As noted in this report, there are no convergence programmes today that include a focus on IWM, effectively leaving a gap in the potential for MGNREGS to deliver long-term resilience for the rural poor. For MGNREGS to provide longer-term resilience, there is a need to revive and re-integrate a focus on IWM in current or upcoming national programmes. In line with

this, current and future poverty alleviation programmes, including future IWM programmes, must work to better articulate how their arrangements would converge with MGNREGS. Better outlining convergence opportunities within the annual MGNREGS guidelines could provide the right starting point for state and district officers to make concrete changes in how planning is approached.

Guideline revisions could include identifying how different roles and responsibilities – such as who leads on technical aspects, quality control, and so on – can be distributed between the government authorities from different departments, MGNREGS staff, and collaborating NGOs. Similarly, providing examples and specifying how funding from MGNREGS and other programmes can be used together – in other words, how budget lines from different programmes can be combined – would be a great step towards actualising convergence. Another helpful clarification would be to recommend a hierarchy, or a nested order, under which convergence can be planned in district-level plans.

Focusing on district convergence

Achieving policy convergence requires strong policy direction, prioritisation and an agreed focus on climate resilience at district level, with key roles for state authorities and CSOs. In practice, this means developing governance systems, as mentioned above, but also focusing on the relationships required between key actors horizontally at district level and vertically between state and districts.

Under MGNREGA, states can choose to pursue diverse development planning objectives, INRM and IWM being only some of several politically expedient priorities competing for attention (Vasudevan et al., 2020). Even if states do decide to prioritise resilience objectives and coordination, evidence to date shows that the focus for convergence between different line departments and programmes lies at the district level. Districts are the scale at which *integrated* watershed development is both administratively and institutionally feasible and recommended by the MGNREGA guidelines. It is also the scale at which system externalities and trade-offs between priorities identified at local levels can be identified and potentially reconciled. For example, gram panchayats tend to focus on ‘popular’ works, but district line departments have historically been important for the management of common lands and public goods such as forests, which represent key resources for the rural poor.

Case studies show that an engagement to produce convergence from both state and district levels can deliver successful outcomes. For example, the mega-watershed projects in West Bengal (Box 5) show how

it is possible to deliver consistent and lasting integrated watershed development objectives through MGNREGA if the state establishes a dedicated multi-scalar, multi-stakeholder governance architecture with this specific aim. Convergence mostly takes place at the district level via the cooperation, coordination and pooling of resources between different line departments and other government rural development programmes.

Districts are the meso-level institutional focal point, where village- and block-level priorities are reviewed and consolidated for formal approval from the state. In the absence of coordination and policy direction from the state level, convergence is contingent upon the priorities and educational background of individual district collectors and their support staff. If they change roles, continuity of planning is lost.

Acknowledging CSOs as integral parts of the MGNREGS system

State and local CSO involvement is necessary to support these linkages, providing a back-up system to governmental institutional memory. CSOs are key stakeholders that enable sharing of knowledge between silos and also across scales, promoting communication, and providing technical oversight and strategic direction. In fact, CSOs are themselves key components of the convergence puzzle, as they can bring other types of funding from multilateral and bilateral development agencies to add another layer of convergence. This can pay for CSOs’ time and expertise while supporting communities and authorities, often enabling a more participative approach, as outlined under the CFT and CFP approach.

Indeed, CSO efforts to improve the effectiveness of MGNREGS often aim to supplement the formal mechanisms with additional community awareness raising, activism and planning conducted through existing or specially created community institutions. With extensive and extended experience of working closely with local communities, they are usually well placed to play a role as facilitators, intermediaries and mobilisers, acting as a secretariat to the community and exploring the potential of MGNREGS assets to contribute to local resilience and livelihoods.

Ultimately, the ideal scenario is to craft longer-term plans and objectives prior to the annual participatory process. These locally prioritised plans can be formulated in terms of bundles of MGNREGA-permissible assets and convergence possibilities, so that these can be considered as integrated components of the local shelf of works when voting occurs (MoRD, 2013b).

4.3 Adopting a long-term adaptation perspective

Integrate forward-looking climate planning

Recent MGNREGS guidelines emphasise the need for using GIS technologies in IWM to base the planning of assets on a robust understanding of watershed parameters. Yet few initiatives systematically integrate climate decision-making tools to support decisions based on a robust understanding of future climate scenarios.

There is therefore a clear need to incorporate participatory climate risk and vulnerability assessments systematically in the MGNREGS planning process at multiple scales, both to determine those populations most at risk of current and future climate variability, and to incorporate climate risks into the ridge-to-valley plan and the design of assets to improve their durability (MoRD, 2020). At the local level, integrating climate risks can be done through both retrospective and forward-looking decision-making tools such as past and future resource maps, which can guide decisions on asset priorities. Because future climatic patterns will not follow a linear trajectory, using only backward-looking tools is not advisable. Finally, participatory assessments could ideally be integrated into GIS tools by mapping the results into geospatial layers to provide an optimum outcome drawing on both approaches.

Given the impossibility of identifying a single most likely future scenario, it is preferable to focus on promoting simple decision support tools and approaches that include only 'best, normal, and worst-case' scenarios for the future. This can be done through theory of change exercises that support communities to describe pathways of change towards resilience, including those which integrate traditional coping strategies and indigenous knowledge into long-term plans. In defining these scenarios, community knowledge and experience of climate change at the local level should be combined with other data sources. The integration of climate data into GIS systems should be used to confirm community perspectives rather than dictate options.

There is a need to strengthen the resilience measures being delivered by MGNREGA through integrated ecosystem and watershed management approaches. Currently, weather and climate-related information is not being utilised at its fullest. This is primarily due to the difficulty of integrating this information in planning in a time-bound manner.
— National-level state official, MoRD

The biggest potential of [the MGNREGA] programme is the enhanced support of technical manpower to enable capacity building, along with making GIS tools and climate information system tools easy to use. — National-level state official, MoRD

This approach can help to recommend interventions that are beneficial across a wide range of different potential future climate scenarios (so-called 'low-regrets interventions'), rather than trying to identify optimal assets (James et al., 2018; Ranger, 2013). Lastly, such an approach also improves community awareness of climate change, which is critical for achieving local behavioural changes and increased motivation for participating in MGNREGS.

Take a long-term perspective at the national level

Given the extent of the needs of the rural poor in India, it is easy to endorse an approach that aims to treat all regions, and in the fastest possible way. The concept of 'saturation' under MGNREGS, of covering the full extent of vulnerable regions and meeting the population's needs, is questionable. Under the current short-term perspectives, and noting technical challenges in delivering assets of quality, it is difficult to envisage that assets will remain useful for more than five, perhaps ten years. While providing benefits to the rural poor equitably across all blocks is important, the concept of saturation could be implemented at a larger scale. This could allow building assets at the most appropriate locations across a watershed or agro-ecological landscape. More durable assets can provide more wages for workers by requiring dedicated asset management work over longer time periods. Finally, durable assets allow to build complementary assets, rather than starting afresh with new constructions after only a handful of years.

Developing and implementing a series of multi-year plans, with both social and physical works that allow populations to adapt over time, rather than aiming to develop and complete a block's workplan in 18 months, could increase the asset quality needed to achieve long-term resilience. However, this must be delivered through converging programmes, as MGNREGS has an obligation to provide labour across all needful blocks. Targeting and prioritising specific vulnerable areas — rather than specific minority castes — can improve community and landscape resilience at scale. The opposite creates the risk of creating a patchwork of unsustainable and maladaptive assets, incurring further costs in the foreseeable future.

Climate change is expected to drastically affect rainfed arid and semi-arid regions. Thus, assets and structures planned for the current climate, or based on previous climatic patterns, may not be viable even on a short-term horizon. While incomes may increase due to integrated watershed management activities in the short term, they may be very unstable in the face of even mild fluctuations in annual rainfall and temperatures.

Integrating climate change risks and scenarios in the planning assets at the community level is necessary, but it needs to be undertaken via simple and straightforward exercises that consider appropriately short timescales for rural populations. This means more complex planning for transformational solutions needs to be contemplated at the national and state levels. For example, short- or medium-term planning approaches may consider the reducing annual rainfall within a landscape and deliver integrated structures to increase access to drinking water. But long-term planning may reveal that rainfall and groundwater recharge won't be sufficient to support

any structures within ten years. In this case, government authorities will need to work with local populations to agree on more drastic measures, which could include relocation.

MGNREGA is one of several mechanisms required to deliver inclusive and fair solutions for adaptation in India, with, for example, large-scale infrastructure projects complementing its devolved structure. As such, long-term and national planning efforts that integrate climate risks at the national level – as done by the India Meteorological Department – must be integrated into the ongoing guidance for MGNREGS. Revising the guidelines each year is essential, and guidelines could be made more directly accessible to the local levels, both in terms of the use of technical language and greater public visibility. For example, a dedicated website could promote MGNREGS guidance with successful case studies and field-based evidence drawn from improved MEL of assets.

5

Conclusion

Building resilience using an INRM approach through MGNREGS is possible, but it is a challenge as INRM will remain a second priority to the provision of labour. MGNREGA created a national government programme with an annual planning process whose principal mandate is to provide guaranteed employment; this is a considerable achievement in itself. Over time and with policy changes, it has become the main mechanism for delivering community-level IWM and INRM projects. Yet MGNREGS, at its heart, is not a fully integrated and self-contained multi-year watershed development programme. Applying best practices for IWM as identified above is easier said than done, considering the ongoing barriers found in practice.

We have identified two key windows for implementing changes. The first is through the dedication and commitment of state and district officials, who have the discretion and authority to make convergence, coordination and a climate focus the priorities in their implementation of MGNREGS. Ensuring adequate technical skills among state and district officials, and collaboration between state and civil society – and between converging departments – is critical. The second is through continuing improvements of annual guidelines and the Master Circular, which could aim to crystallise the best available science and evidence from MGNREGS and provide updates every year. Specifying steps and examples to incentivise convergence in annual guidelines can fuel officials' efforts and commitment to make changes happen. Ultimately, reprioritising IWM through a new programme – such

as the defunct IWMP, or as part of a revision of another national programme – such as giving it effective space and funding under PMKSY, is essential to provide the mass asset creation required to respond to climate change and promote resilience in rural areas.

Most of the recommendations outlined above focus on providing a series of practical, technically accessible and readily implementable adjustments to the current delivery of assets, rather than arguing for a system change. The latter is not only unlikely via the Act itself, but also not necessary. A change of mindset and of perspective is what is primarily needed to unlock improved resilience and development outcomes, given the extensive devolved system that MGNREGA already provides. This report aimed to support raising the awareness and appetite necessary to drive those changes at local, state, and national levels.

Improving MGNREGS outcomes is critical to avoid maladaptation through the creation of both socially and environmentally inappropriate assets, but achieving convergence has become critical financially as well. The COVID-19 pandemic significantly diverted funding and staff to deal with the state of emergency during 2021. Faced with the realities of increasing climate shocks and changes, compounded by other potential political, economic and health shocks, there is an urgent need to create systems that can absorb and adapt to these shocks. But more importantly, improving resilience could provide a better chance of living a good life for India's rural poor.

Appendices

Table A1. Main active national Indian rural development programmes that can converge with MGNREGS

PROGRAMME	MINISTRY	BUDGET	OBJECTIVE
Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)	Ministry of Rural Development	FY19–20: Rs71,000 crores FY21 Rs61,500 crores	Rights-based social protection scheme providing on-demand guaranteed unskilled employment.
DAY-NRLM (Deendayal Antyodaya Yojana – National Rural Livelihoods Mission)	Ministry of Rural Development	Unknown	A rural poverty reduction scheme with a strong focus on community self-help institutions and livelihoods diversification and development. Targets landless, women and youth.
Jal Jeevan Mission	Ministry of Jal Shakti Department of Drinking Water & Sanitation	Unknown	A programme to provide potable water to rural homes through functional household tap connection.
Pradhan Mantri Awaas Yojana – Gramin (PMAY-G)	Ministry of Rural Development	Unknown	A rural housing programme to target the homeless. Housing for All by 2022.
Pradhan Mantri Gram Sadak Yojana – (PMGSY)	National Rural Infrastructure Development Agency , Ministry of Rural Development	Unknown	A rural transport infrastructure programme to increase all-weather rural road connectivity.
Pradhan Mantri Krishi Sinchai Yojana (PMKSY)	Ministry of Jal Shakti (Water), Ministry of Rural Development, Ministry of Agriculture	FYs 15–20: Rs50,000 crores for period of 5 years	An irrigation and water conservation programme to improve the productivity of farms through better utilisation of resources (supersedes the Integrated Watershed Management Programme).
Integrated Watershed Management Programme (IWMP)	Department of Land Resources, Ministry of Rural Development	Unknown	A watershed management programme, with core objective to restore ecological balance through IWMP and INRM approaches to treat degraded natural resources such as soil, vegetative cover and water.
Shyama Prasad Mukherji Rurban Mission (SPMRM)	Ministry of Rural Development	Unknown	Service provision and applying principles of urban planning to clusters of rural settlements.

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This report explores whether and how the assets delivered under Mahatma Gandhi National Rural Employment Guarantee Schemes can contribute to long-term adaptation by the rural poor in India. Based on a desk review and interviews across three arid and semi-arid Indian states, it investigates the design and policy evolution of MGNREGS as a vehicle for resilience building. The report identifies policy and design opportunities through which the provision of assets under MGNREGS can improve the long-term resilience of rural beneficiaries.

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