



Department
for International
Development

Mainstreaming Climate Change into Social Protection Programmes

A Case Study from India

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Infrastructure for Climate Resilient Growth in India (ICRG) Programme

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In association with



1. Introduction

Mainstreaming of climate change adaptation into development programs is increasingly seen as an effective way to address the impacts of climate change (Vincent and Colenbrander 2018). In this policy brief, 'mainstreaming adaptation' refers to integration of climate change adaptation strategies with sectoral policies and programs. By contrast, dedicated adaptation approach involves policies and programs designed to achieve adaptation objectives as a core function. While dedicated adaptation projects will still be important, mainstreaming offers multiple benefits that include improved development outcomes, avoid policy conflicts, enhance efficiency and scale compared to managing adaptation separately, and leveraging the much larger financial flows than the funding available for financing adaptation separately.

In India, the State Action Plans for Climate Change (SAPCCs) mark the first large-scale attempt to develop action plans for climate change adaptation. While most of these plans represent a planning process that include climate risk and vulnerability assessment to help identify and prioritize sectors and adaptation actions to address the impacts of climate change, implementation remains a challenge. As far as mainstreaming is concerned, there are very few documented cases that represent successful mainstreaming of adaptation into development schemes and programs. This is also true for central government schemes where there is limited effort to design and implement interventions that have stated multiple objectives, such as poverty reduction, economic growth, and climate change. In fact, there is a growing evidence base worldwide pointing to an "implementation gap" in mainstreaming efforts because of barriers such as lack of sustained political commitment, lack of coordination and cooperation among key stakeholders, absence of clear mandates, conflicting political interests, and inappropriate organizational structures and practices (Mogelgaard et al. 2018, Mimura et al. 2014).

Infrastructure for Climate Resilient Growth (ICRG) is a bilateral cooperation project with the Ministry of Rural Development (MoRD), Government of India, and UK's Department for International Development (DFID), supported by the International Climate Fund of the UK government. It represents the only conscious effort to mainstream climate change into the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) – India's and the world's largest works based social protection program. This policy brief discusses the tools used during various stages of the mainstreaming process and documents preliminary results of the project. It concludes with some of the learnings based on the implementation experience till date.

2. Mainstreaming Climate Change into MGNREGA

The main objective of MGNREGA is to reduce rural poverty by providing a legal guarantee of 100 days' paid labour on demand a year to every rural household in India and building infrastructure that supports local livelihoods. The dual focus of MGNREGA on wages and infrastructure, and its emphasis on natural resources management makes it amenable for co-creating benefits of social protection and climate resilience. Infrastructure for Climate Resilient Growth is a technical assistance programme that is seeking to facilitate more effective investment in rural infrastructure under MGNREGA to support rural economic growth and improve the climate resilience of vulnerable people in India, especially women and people with disability. The intended outcome is improved quality of the physical assets under MGNREGA demonstrated in 103 blocks of three states in India -Bihar, Chhattisgarh and Odisha.

There are certain enabling factors (see Box 1) that support the ICRG program in mainstreaming climate change into MGNREGA.

Box 1. Enabling factors for ICRG in mainstreaming climate change into MGNREGA

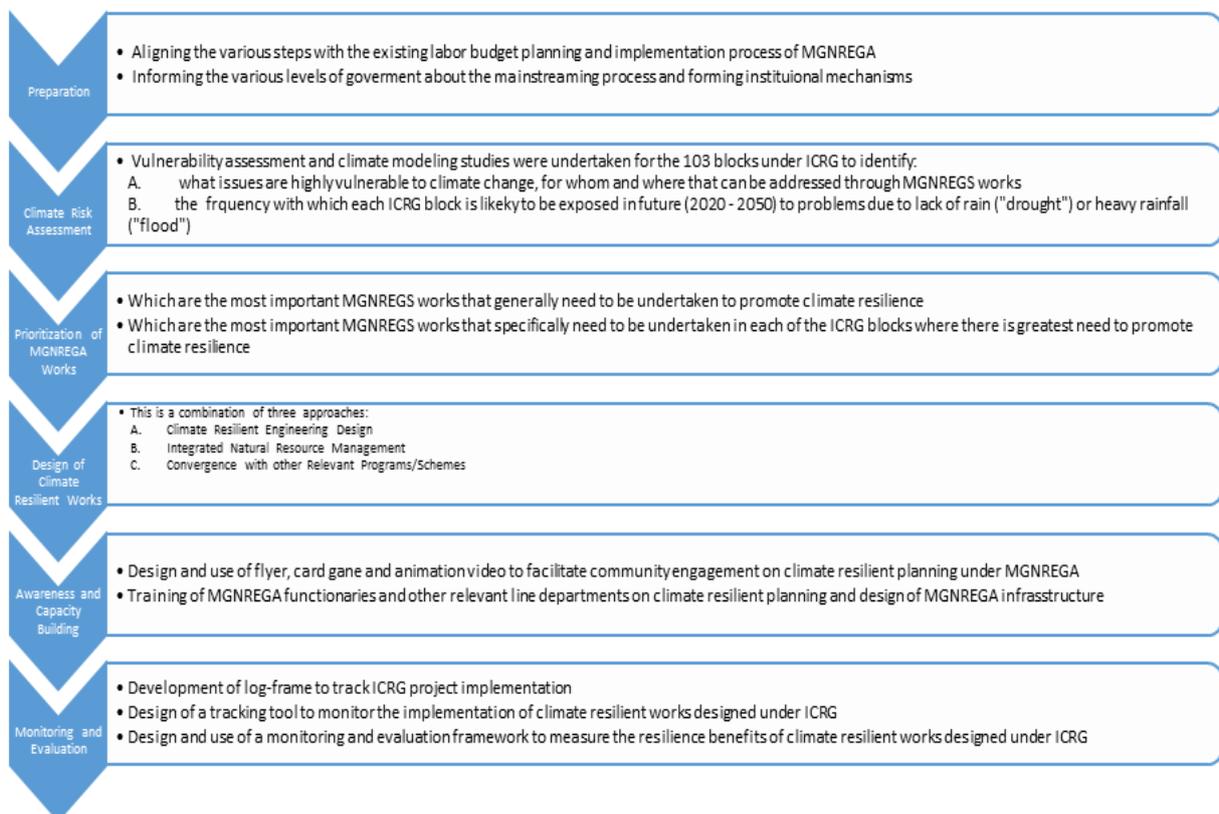
Policy Framework: Government of India (GoI), in its Nationally Determined Contribution (NDC) has mentioned MGNREGA as one of the 24 key initiatives to address the problem of climate change, while simultaneously improving the livelihoods of the poor.

Financing: Funding for implementing the adaptation interventions identified within ICRG are provided by MoRD through MGNREGA or by other line Departments through convergence. GoI invests nearly ₹4 billion annually in constructing rural infrastructure through MGNREGA.

Information and Tools: Being a technical assistance program, ICRG has been providing specific tools and guidelines for mainstreaming climate change into MGNREGA – including climate risk and vulnerability assessment, training, access to knowledge and expertise – that will enable and support the implementation of mainstreaming.

3. Methods and Tools for Mainstreaming

The process adopted for mainstreaming was based on existing tools such as the Adaptation Policy Framework of the United Nations Development Programme (UNDP) (Olhoff and Schaer 2010), good practices around climate risk, climate proofing existing plans, and ensuring adaptive development (UNFCCC 2014). However, since these tools and practices were being applied to a specific development program, MGNREGA, the method was adapted to ‘retrofit’ an existing plan. The process used in ICRG comprises of the following steps:



3.1 *Preparation*

Activities related to planning and implementation of works under MGNREGA happen as per specific guidelines laid down in the Act and the Annual Master Circular issued every year by the MoRD. Mainstreaming activities under ICRG were done in a manner that was consistent with these processes and timelines. In addition, project review and/or steering committees have been formed at the national and State levels (in ICRG States) to facilitate embedding of ICRG interventions within MGNREGA.

3.2 *Climate Risk Assessment*

This assessment builds on methods from other studies in India (e.g. Esteves et al., 2013a/b) and uses the latest international definitions in the Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC AR5; IPCC, 2014). The assessment has considered:

- The degree to which each ICRG block may be affected by variations in climate (its 'climate sensitivity') by identifying the extent of net irrigated area, groundwater availability and forest cover. These three features were chosen for two reasons. Firstly, because the less their extent the more likely it may be that an area will be negatively affected by climate change. Secondly, because they can all be increased by undertaking relevant MGNREGS works. So, ICRG blocks have been ranked as having High 'sensitivity' to climate if the extent of net irrigated area or groundwater availability or forest cover is much less than the State average.
- People's ability to adjust and respond to opportunities and challenges (their 'adaptive capacity') by identifying how much 'Poverty' and 'Marginalisation' occurs in each block. Poverty has been considered in relation to the proportion of 'households with monthly income less than Rs 5000', 'houseless rural', and 'landless households deriving a major part of their income from manual casual labour'. 'Marginalisation' has been considered in alignment with beneficiaries of MGNREGA in relation to the proportion of 'women-headed households', 'Scheduled Caste households' and 'Tribal group/Legally released bonded labour/Manual scavenger households.' In addition, it also includes 'people with disability.'
- The predisposition for each block to be adversely affected by climate change (its 'vulnerability') by combining the rankings in Points 1 and 2. Data for this was sourced from a study done under ICRG (Smithers et al., 2018).
- The frequency with which each block was exposed (1984-2014) or is likely to be exposed in future (2020-2050) to problems due to lack of rain ('drought') or heavy rainfall ('flood') ranked relative to all ICRG blocks. Ranking was based on the coefficient of variation in June-July-August-September rainfall as a surrogate for drought and number of rainfall events >100 mm/day as a proxy for flood. Data was sourced from another study for ICRG that analysed the CORDEX South Asia model data on precipitation for ICRG blocks for the period 2021-2050 (Ravindranath et al., 2017).

3.3 *Prioritization of MGNREGA works*

The potential importance of MGNREGS Schedule 1 works in Categories A (Public works relating to natural resources management) and B (Community assets or individual assets) in promoting climate resilience was assessed according to the following stepwise process:

- A. MGNREGS works were prioritised through a two-stage Delphi process in which an international expert and six national experts each independently:

- Identified which MGNREGS works are relevant to:
 - Each of the climate sensitivities (i.e. net irrigated area or groundwater availability or forest cover), and
 - Drought or flood.
- Prioritised the works by scoring them against a range of criteria (see Box 2 below) that drew upon those outlined in the technical guidelines for the national adaptation plan process published by the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat (Least Developed Countries Expert Group, 2012).

Box 2. Criteria and scores used to prioritise MGNREGS works

Efficacy – the extent to which the works are relevant to annual variations in rainfall.

Urgency – how urgent it is to undertake the works, i.e. whether they are needed now to address existing variations in rainfall or because it may take some years for the MGNREGS work to become effective (e.g. due to the time it takes a tree to grow and deliver benefits).

Durability – the length of time that the MGNREGS work is likely to last and deliver benefits.

Acceptance – the extent to which Gram Panchayats and communities are likely to support and do the MGNREGS work.

Knowledge and skills – the likelihood that village communities will have the skills and knowledge to do the MGNREGS work.

Time – how many person days it is likely to take to complete the MGNREGS work. Works that take less time have been scored more highly, as they give chance to do other priority works for climate change within the 100-day allowance as well as additional works.

Co-benefits – the extent to which the MGNREGS work will provide benefits not just for the climate sensitivities to which they have been related (e.g. for other climate sensitivities or livelihoods).

- B. Lists of the ‘top six’ MGNREGS works (or more if works had been ascribed equal scores) in Schedule 1 Categories A or B were selected as being the most important MGNREGS works that generally need to be undertaken to help people cope with climate change in relation to each of the climate sensitivities and: drought; flood; and drought and flood.
- C. The priority MGNREGS works that specifically need to be undertaken in each of those blocks where there are High climate sensitivities and future exposure drought and/or flood is likely to cause problems with High frequency were then identified by interacting the lists of the ‘top six works’ with the results of the vulnerability assessment.

3.4 *Design of Climate Resilient Works*

All Climate Resilient Works (CRWs) are designed by combining three approaches:

- A. Climate Resilient Engineering Design
 - Design of structures under ICRG has been done based on both historical and projected climate data – by taking the maximum rainfall scenario and surface runoff – so that planning is done based on uncertainty, and therefore structures become more durable;

- Design of soil and moisture conservation work has been done by considering maximum one-day rainfall data to calculate the maximum one-day runoff;
- All water disposal structures such as waste weir, stone outlet for soil water conservation and water harvesting structures have been designed based on maximum flooding scenario, so that these can sustain water pressure and can dispose surplus water without any damage to the structure;

B. Integrated Natural Resource Management

Each Climate Resilient Work under ICRG is a combination of a core work (for e.g., land development) and a few ancillary structures (for e.g., plantation on the bunds, dug wells to harvest sub-surface water, Nadep pits etc.). Such clustering is done based on bio-physical (drainage line, ground water, and forest), socio-economic features (production system, land-use pattern), and/or expected outcomes (water availability, diversified livelihood). This approach ensures that CRWs are durable and productive.

C. Convergence with other Relevant Programs/Schemes

A livelihood plan is developed for each CRW and its beneficiaries, and the plan is implemented by leveraging resources from other programs/schemes operational in the area. This enhances the productivity of the CRWs and leads to more resilient communities.

Box 3. Qualities of Climate Resilient Infrastructure

- ☺ **Durability:** Infrastructure should be durable in terms of minimizing the need for maintenance and promoting longevity. This can include both structural measures such as improving robustness of infrastructure to withstand storms, flooding and drought as well as technological measures such as improving technology design which factors in changing climate pattern and resource availability.
- ☺ **Livelihood Diversification:** All aspects of use and inter-linkages with other resources should be considered. For example, Plantation works should be taken up around a water body (reservoir works) to strengthen the banks and the reservoir can be used for fisheries.
- ☺ **Inclusion:** Worksite facilities and infrastructure should be responsive to the needs of women, children and marginalized people.
- ☺ **Integration:** Infrastructure should consider integration and alignment among interlinked resources, stakeholders, plans and designs to realize increased social, environmental and economic benefits. For example, development of water bodies should be complemented by other programmes like the promotion of sprinklers/micro-irrigation, or water-efficient agriculture methods (such as system of rice intensification) or promotion of the crops/ crop varieties requiring less water.
- ☺ **Flexibility:** our ability to predict climate change and adapt to such changes is constantly evolving. Flexibility can be achieved through the introduction of new knowledge and technologies. In case of MGNREGA infrastructure, it also means considering and incorporating indigenous and traditional knowledge and practices in new ways.

3.5 *Awareness and Capacity Building*

Trainings on climate resilient planning and design of MGNREGS infrastructure have been provided to all administrative and technical MGNREGA functionaries as well as relevant line departments in ICRG intervention areas.

Communication materials, such as flyer, card games and animation video on the impacts of climate change and how the ICRG approach to implementing MGNREGA can address them have been designed and used extensively in reaching out to Self Help Groups (SHGs), farmers and village communities.

3.6 *Monitoring and Evaluation*

Progress of the mainstreaming activities implemented under ICRG is being monitored at several levels.

A. Log-frame

There is an ICRG project log-frame that monitors outputs, outcomes and impact of the project interventions. The log-frame has milestones that are reviewed annually.

B. Climate Resilient Works Tracker

Since funding for the implementation of CRWs designed under ICRG comes from MoRD through the MGNREGS, there is a lag between design and implementation of CRWs. This is further compounded by general performance of the ICRG States on MGNREGS implementation, which is one of the determining factors in transfer of funds from the MoRD to the States. In order to assign priority to the implementation of CRWs, a tracker has been designed that monitors the status of implementation of CRWs and individual MGNREGS works contained in them. The updated tracker will be shared every month with policymakers in the ICRG States for necessary action.

C. M&E framework for Measuring Resilience Benefits of CRWs

A monitoring and evaluation framework has been designed to measure the resilience benefits of CRWs being implemented under ICRG. Indicators have been developed for different kinds of MGNREGA works (see Table 1 for the complete list) and detailed formats have been designed for collecting data.

Table 1: Expected outcome from different kinds of MGNREGS works			
CRW - MGNREGA Works	Economy	Durability	Outcome/Productivity
Water conservation and water harvesting works	Cost of construction per unit of storage of water/unit area benefitted	Pucca work: 15-25 years Kaccha work: 5-10 years	<ul style="list-style-type: none"> • Number of wells recharged • Area brought under irrigation • Cropping intensity • Increase in crop production • Increase in groundwater level/table • Change in land use
Afforestation and tree plantation	Cost per unit area/plant till the tree grows (3-4 years)	Afforestation trees, 15-25 years	<ul style="list-style-type: none"> • Economic (fodder, fruits etc.) • Plant survival rate • Carbon content
Irrigation canal including micro and minor irrigation	Cost per unit area brought under irrigation	15-25 years	<ul style="list-style-type: none"> • Increase in productivity in a year by taking number of crops in a year
a) Irrigation facility/horticulture/plantation b) Farm bunding/land development	Cost per unit area brought under irrigation/plant till its productive/unit area developed	a) 15 -25 years b) 10-15 years	<ul style="list-style-type: none"> • Area covered under irrigation/plantation/land development • Increase in productivity in a year by taking number of crops in a year
Renovation/repair of traditional water bodies including de-silting of tanks	Cost per unit increase in storage capacity of water/silt removed	10-15 years	<ul style="list-style-type: none"> • Increase in storage capacity of water • Increase in groundwater table
Flood control and flood protection works	Cost per unit area developed	10-15 years	<ul style="list-style-type: none"> • Area developed • Increase in productivity per annum
Land development	Cost per unit area developed	15-25 years	<ul style="list-style-type: none"> • Area developed • Increase in productivity /annum

4. Results and Learnings

The ICRG project is in its third year of implementation and many of the outcomes of the mainstreaming interventions are yet to be fully captured. However, some of the preliminary findings and lessons learned are presented here.

A. Positive Change in Choice of MGNREGA Works

The ICRG program has influenced two cycles of labour budget planning under MGNREGA – FY 2017 and 2018. The prioritized list of block-specific MGNREGS works that have the greatest potential to reduce vulnerabilities and enhance climate resilience has been used by 448 gram panchayats in ICRG blocks in order to decide the shelf of works. The number of gram panchayats influenced increased significantly in the second year, which can be linked to a couple of factors:

- I. The communication materials used in 2018 played an important role in creating awareness among the village communities about the impacts of climate change and the appropriate choice of MGNREGS works to address such impacts and enhance community resilience;

- II. Two of the three ICRG States issued Directives before the initiation of the labor budget planning process in FY 2018 to use the ICRG approach in deciding the shelf of works.

The methodology for deciding the prioritized list of MGNREGA works was also modified based on feedback from policymakers and MGNREGA functionaries during its use in the first cycle. Deficit in total June-July-August-September (J-J-A-S) rainfall was replaced by coefficient of variation in J-J-A-S rainfall as a surrogate for drought. Attribution of priority MGNREGS works to each block was done in relation to both 1984-2014 climate data and 2021-2050 climate projections. This demonstrates that local consideration of climate change should make a considerable difference to the selection of MGNREGS works. Priority works specifically attributed to each block with regard to climate vulnerabilities and exposure changed between 1984-2014 and 2021-2050 for: 27 out of 35 blocks in Bihar; 28 out of 34 blocks in Chhattisgarh; and 21 out of 35 Blocks in Odisha.

B. Positive Change in Budgetary Allocation

An estimated ₹ 19.4million of domestic public finance is expected to be mainstreamed into climate change. This includes both direct support for climate resilient works designed under the programme as well as indirect support for gram panchayat level labor budgets that integrate climate change in the selection of works. This is a conservative estimate since more funds are expected to flow through convergence from other relevant departments at the time of implementation of these projects, which have not been accounted for in the current estimate. However, as mentioned earlier, implementation of these works remains a challenge because of problems in timely transfer of funds from MoRD to the States.

C. Improved Quality of Physical Assets

The ICRG project has facilitated the selection and design of 532 climate resilient works till date. Because climate risks were incorporated in the design of these structures, they are supposed to be more durable and productive. Data is currently being collected under the M&E framework that has been developed for measuring the climate resilience benefits. Some factors that contribute to the durability of earthen infrastructure, such as plantation on the embankment take a long time to realize and will therefore be a challenge in terms of gathering evidence within the timeframe of the ICRG project (2016-2020). However, the project is making use of innovative technology, such as drones to measure the benefits from CRWs, and certain indicators, such as silt accumulation in water harvesting structures, bund erosion, and cracks on earthen embankments can be measured, which would have otherwise been impossible or difficult to capture through physical surveys.

5. Conclusion

MGNREGS provided employment to approximately 46 million rural households in 2018 and on an average around 3 million assets get created annually under the scheme. It is important to ensure that the development gains from this program do not get undermined because of the impacts of climate change. Therefore, it is important to mainstream climate change into MGNREGS, since mainstreaming offers one of the most efficient and effective ways for climate adaptation.

Experience from the ICRG project provides useful insights into this mainstreaming process. The process was informed by theory on climate risk assessment and robust decision making. Vulnerability

assessment and climate projection studies were undertaken as part of this project and the data was used for the prioritization of MGNREGS works as well as the design of climate resilient works.

The steps and tools used in the mainstreaming process was presented to policymakers and MGNREGA functionaries at all levels of the government. The scheme already follows one of the most bottom-up and inclusive planning processes, which was an advantage for ICRG. However, screening of MGNREGS works using climate risk assessment at the block level also meant that there was a trade-off between short term needs and long-term adaptation options. The climate communication materials developed under ICRG for the village communities and capacity building of MGNREGA functionaries on climate resilient planning and design helped in bridging this gap. Feedback received during these workshops and trainings were also used to refine the process itself and make modification in the prioritization method.

Although there is an overarching policy framework for climate change in India in the form of NDCs, mainstreaming activities for specific schemes and programs, such as MGNREGA are aided by more program-specific directives and guidelines. In this case, for example, State directives instructing the use of ICRG approach in the planning of MGNREGS works was instrumental in shifting choices.

The process and steps laid out in this policy brief are specific to MGNREGA – the largest works-based social protection program in the world. However, they are equally applicable for use in other national and sub-national rural development programs. ICRG has the flexibility and resources to generate knowledge that was used in the mainstreaming process, however, the methods can be tweaked for data-constrained environments. Having such a process to mainstream is necessary to provide a framework for the achievement of India's adaptation commitments as enshrined in its NDCs.

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