

IRDR0012: Risk, Disaster and Resilience

MSc Independent Project

***Resilient Critical Infrastructure as an integrator between the
Development Goals and Disaster Risk Reduction: A case study of
Uttarakhand, India after the Kedarnath Tragedy 2013***

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the work of others has been used, it has been clearly identified.

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List of Abbreviations

Centrally Sponsored Schemes	CSS
Critical Infrastructure	CI
Critical Infrastructure Elements Resilience Assessment	CIERA
Decision Maker and Administrator	DCMA
Decision Support System	DSS
Digital Risk Database	DRDB
Disaster Manager and First Responder	DMFR
Disaster Risk Assessment	DRA
Disaster Risk Management	DRM
Disaster Risk Reduction	DRR
District Emergency Operations Centre	DEOC
Early Warning Systems	EWS
Emergency Operations Centre	EOC
Engineers	ENG
Glacial Lake Outburst Flood	GLOF
Government of India	GoI
Government of Uttarakhand	GoUK
Infrastructure Failure Interdependencies	IFIs
Joint Rapid Damage and Needs Assessment	JRDNA
Landslide Lake Outburst Flood	LLOF
Medium-Long Term Reconstruction Package	MLTP
Multilateral Development Bank	MDB
Per Capita Income	PCI
Public Buildings	PB
Respondent Category	RC
Risk Reduction Investments	RRIs
Sendai Framework for Disaster Risk Reduction	SFDRR
Social Capital	SC
Social Capital and wellbeing	SCWB

Special Planned Assistance-Reconstruction	SPA-R
State Emergency Operations Centre	SEOC
Standard Deviation	SD
Sustainable Development Goals	SDGs
United Nations Sustainable Development Goals	UNSDGs
User Agency	UA
Uttarakhand State Disaster Management Authority	USDMA
Uttarakhand Disaster Recovery Project	UDRP
Uttarakhand Disaster Recovery Project-Additional Financing	UDRP-AF
Uttarakhand Emergency Assistance Project	UEAP

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Abstract

The calamitous '*Kedarnath hydrometeorological tragedy*' of June 2013, that befell the Greater Himalayan State of Uttarakhand in India, provoked massive disaster mortality, devastated critical infrastructural systems, and wrought havoc on livelihoods and wellbeing. The infrastructural discontinuities incapacitated relief operations and reduced the community's adaptive capacity immensely. It took the cataclysm to make the State and society comprehend rising dependence upon infrastructural nodes and prioritise Disaster-Risk governance. In particular, considerable risk-reduction investments were infused in the Critical Infrastructure to build-back smarter, expand emergency response capacities, and reinforce institutional-policy framework.

Equally obligatory it becomes to evaluate the ensuing impact on development, resilience and risk reduction priorities as envisioned in the Sustainable Development Goals and Sendai Framework. However, there exists limited prior literature that studies the interrelationships among infrastructure resilience, development and risk reduction.

The project therefore, seeks to address this gap by mustering views and perceptions of five groups of senior civil servants and disaster-risk practitioners; through a cross-sectional design comprising a series of *closed-ended (pre-coded on 5-point Likert scale) and open-ended questions*. The analysis of data through *Likert Diagrams, Error-bar chart alongside intuitive ruminations*, aided in drawing inferences and synthesising the perception patterns.

The reflections yielded a definite affirmative trend endorsing a positive transformative impact, the resilient infrastructure cast on select development goals and risk reduction priorities. The detection of concurrent improvements in the development indicators representing the Global Agenda 2030, validates the integrating nature of Critical Infrastructure for development and risk-reduction. The accrual of paybacks from Risk Reduction Investments, fostered in Critical Infrastructure and revitalising community's risk-consciousness, was acknowledged. Embracing risk-informed or ex-ante investment was emphasized upon, to realize the 'resilience dividend'.

Further, the study is as much limited by few intrinsic and extrinsic factors, as fortified with some exclusive strengths that serve to explain the context and boost its relevance. Being a pilot attempt, it breeds tremendous scope for building on,

stimulating pathways for future multi-disciplinary research and practice in the public sphere.

Keywords: Critical Infrastructure, Resilience, Disaster Risk Reduction, Sustainable Development Goals, Sendai Framework for Disaster Risk Reduction, Ex-ante investment.

1 Introduction

1.1 Context

The Greater Himalayan sector of the country, since long, is beset with recurrent and grave assault of hydrometeorological and geophysical risks (Dikshit *et al.*, 2020). Even as the mild magnitude incidents have assumed recurrent character in the zone, the June 2013 torrent in Uttarakhand - the Indian State ensconced in the Southwestern Himalayas, stands out as a hydrometeorological climatic-extreme as per historic-data and exceedance probability (Bhambri *et al.*, 2016).

The unremitting downpour, cloudbursts, slope-failures, river bank-toe erosion, and Landslide- and Glacial Lake Outburst Floods (LLOFs-GLOFs) persisted for continuous three days (15-17 June) in the districts of Rudraprayag, Chamoli, Uttarkashi, Pithoragarh and Bageshwar (Ghosh *et al.*, 2019). On 17th June itself, the State recorded more than 335 mm of rainfall, which is three and three quarters times the daily normal (66 mm) (Dube *et al.*, 2014). The early arrival of high intensity monsoons saw the region receiving approximately 2000 mm of rainfall just within 5 days (details in Table 1), that exceeds the amount received in the whole duration of monsoon season (Rautela, 2018). The consequent rapid swelling of Alaknanda, Bhagirathi, Mandakini and Kali-rivers exacted setbacks worth US\$ one billion, severe infrastructure failure, fatality at a grisly high of 5000 and led to the same proportion stated as gone astray (Ghosh *et al.*, 2019).

Being a celebrated pilgrimage circuit and ecological tourism attraction, the region saw the anomalous monsoonal season (June-September) overlapping with the highest throng, that accentuated the figure of mortality, lost, and victimised (Mehta *et al.*, 2018a). Unprecedentedly, the Critical Infrastructure (CI) loss rendered over 75,000 pilgrims and 1 lakh inhabitants stuck in the higher secluded stretches, for days together (Martha *et al.*, 2014).

The destruction of infrastructure magnified the effects of the cataclysm, that manifested as interrupted business-processes, shattered civic utility services, devastated public buildings, collapsed roads-bridges and ruptured telecommunication lines. This subverted incident response operations and severely compromised the coping competence of the masses. The connectivity was hit hard that accentuated

information vacuum, confusion, delayed response and resource mobilization. The disruption details of major highways' are shown in Table 2 (Sati and Gahalaut, 2013).

Among others, the highways, bridges, medical and educational facilities have been considered as significant escalation points whose failure causes much larger impact than the primary cause (Suppasri *et al.*, 2021). Undisputedly was it realized that infrastructure disruptions dented households' consumption, well-being, and productivity of the economy. Therefore, assessing the impact of infrastructural resilience on development and risk reduction; and taking up ex-ante policy measures assume priority (Hallegatte *et al.*, 2017).

Table 1. Precipitation as registered by India Meteorological Department in the calamity-affected areas during 14-18 June, 2013; (Source: Rautela, 2018)

Sl. no.	Location	Precipitation (in mm)				
		June 14	June 15	June 16	June 17	June 18
1.	Bhatwari	20.0	18.0	35.0	70.0	50.0
2.	Barkot	10.0	15.4	112.6	20.0	20.0
3.	Chamoli	1.0	40.0	58.0	80.0	100.0
4.	Jakholi	30.0	70.0	121.0	110.0	70.0
5.	Joshimath	0.0	31.4	41.9	113.8	80.0
6.	Karnaprayag	8.2	7.0	88.0	90.0	82.3
7.	Munsyari	4.0	25.0	44.0	85.0	75.0
8.	Pithoragarh	0.0	0.0	11.2	90.0	120.0
9.	Purola	30.0	40.0	170.0	60.0	104.0
10.	Rudraprayag	4.0	11.8	89.4	92.2	59.2
11.	Tharali	0.0	15.0	58.0	173.0	80.0
12.	Uttarkashi	15.0	50.0	130.0	162.0	19.0

Table 2. Disruption details of major highways owing to landslides river bank erosion during monsoonal seasons during 2010-2015; (Source: Rautela, 2018)

Sl. no.	Highway	Year	Number of days when traffic was disrupted on the highway					Road disruption (in %)
			June (30 days)	July (31 days)	August (31 days)	September (30 days)	Total (122 days)	
1.	Rishikesh–Badrinath (NH 58)	2010	1	17	25	9	52	42.6
		2011	2	13	14	10	39	32.0
		2012	2	6	18	7	33	27.1
		2013	15	20	17	13	65	53.3
		2014	1	5	4	4	14	11.5
		2015	5	15	17	0	37	30.3
		Total	26	76	95	43	240	32.8
2.	Karnaprayag–Kedarnath (NH 109)	2010	3	12	9	15	39	32.0
		2011	5	9	17	4	35	28.7
		2012	5	8	6	5	24	19.7
		2013	13	21	18	13	65	53.3
		2014	2	11	2	5	20	16.4
		2015	5	12	5	0	22	18.0
		Total	33	73	57	42	205	28.0
3.	Dharasu–Yamunotri (NH 94)	2010	0	7	40	19	66	54.1
		2011	5	5	14	12	36	29.5
		2012	4	5	16	13	38	31.2
		2013	12	20	22	18	72	59.0
		2014	1	10	4	5	20	16.4
		2015	0	4	2	0	6	4.9
		Total	22	51	98	67	238	32.5
4.	Rishikesh–Gangotri (NH 108)	2010	1	9	38	19	67	54.9
		2011	7	14	16	19	56	45.9
		2012	5	4	22	10	41	33.6
		2013	17	16	18	17	68	55.7
		2014	0	19	7	3	29	23.8
		2015	1	4	6	0	11	9.0
		Total	31	66	107	68	272	37.2

1.1.1 Study Area

The region under study is the built environment situated within the physiographic landscape set along the main river-valleys (Alaknanda, Bhagirathi, Mandakini and Kali) in the high-altitude mountains of the State. Positioned in the south-western Himalayas, it is distinguished by huge elevation contrast, large topographic relief, diverse geology, varied land-usage, askew precipitation patterns, dense stream network, vast glacial expanse and luxurious vegetation cover (Mehta *et al.*, 2018b;

Dikshit *et al.*, 2020). Though the entire region from eastern most Kali river-valley to western most Yamuna river-valley was impacted, the Kedarnath-Gaurikund-Rambara area in Mandakini valley was, however, hit hardest as depicted in Fig. 1 (Rautela, 2013).

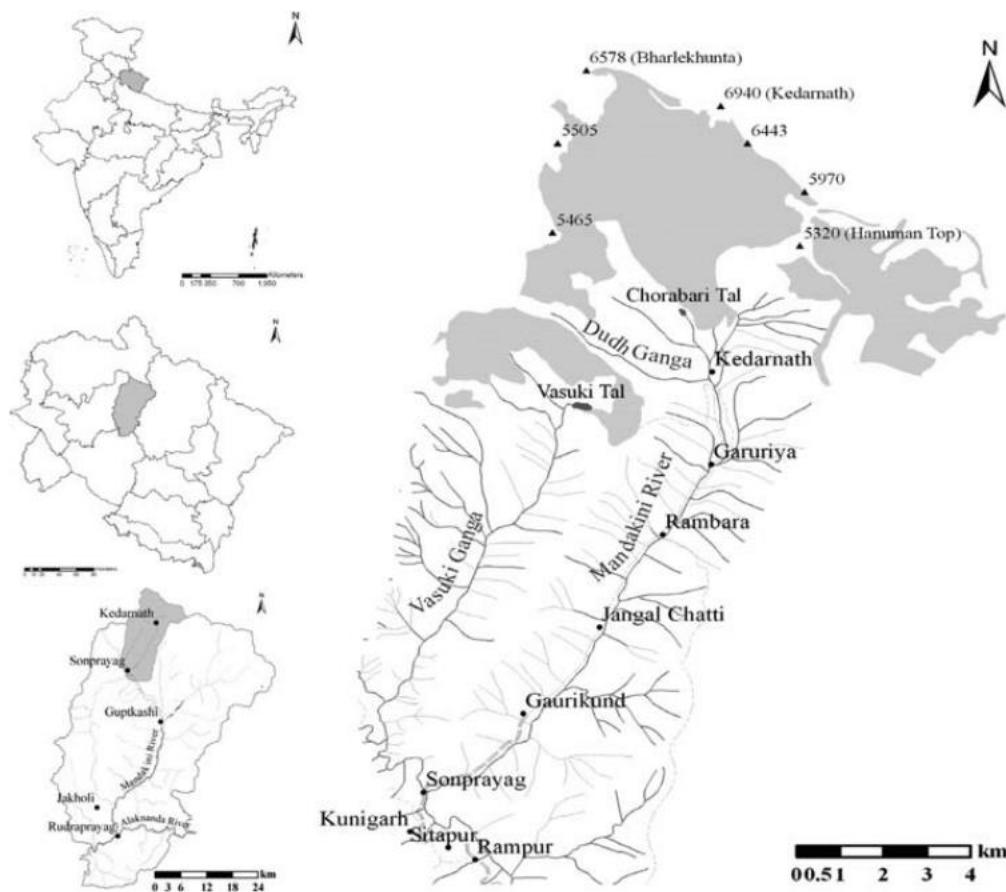


Figure 1. Site map of Kedarnath area. The left-hand side depicts the maps of India, Uttarakhand and Rudraprayag districts; Source: Rautela, 2013

Of the total physical extent of 54,000 km², the hill earth forms constitute a preponderant 85% and has an elevation range of 200 to 7800 meters above sea level. The eastern border is shared with Nepal and the western one with Tibet. The State is classified into two administrative divisions- Garhwal and Kumaun, comprising of overall 13 districts (Negi and Kumar, 2016). Among all, the northernmost districts of Uttarkashi, Chamoli, Rudraprayag, Bageshwar and Pithoragarh as shown in Fig. 2, were worst affected by the catastrophe (Dash and Punia, 2019), all of which lie in Seismic Zone V (JRDNA, 2013).

About 70% of the population depends on agriculture for their livelihood, while the tourism sector contributes about 25% to the GSDP. The seismic dynamicity, high relative relief, along with irregular meteorological features make the area susceptible to frequent, severe and uncertain onslaught of climatic extremes, earthquakes, lightning, landslides and Glacial & Landslide Lake outburst floods (Fig 3) (Ghosh *et al.*, 2019)

The high Disaster-Risk occurrence rates are attributed to ever-increasing association of the changing climate with hazards, surface-soil instability, elevation-contrast, overutilization of natural capitals, uninhibited deforestation, and unsystematic land-use patterns that stretch the sphere of human-environment interface deeper into precarious landscape (Dikshit *et al.*, 2020).

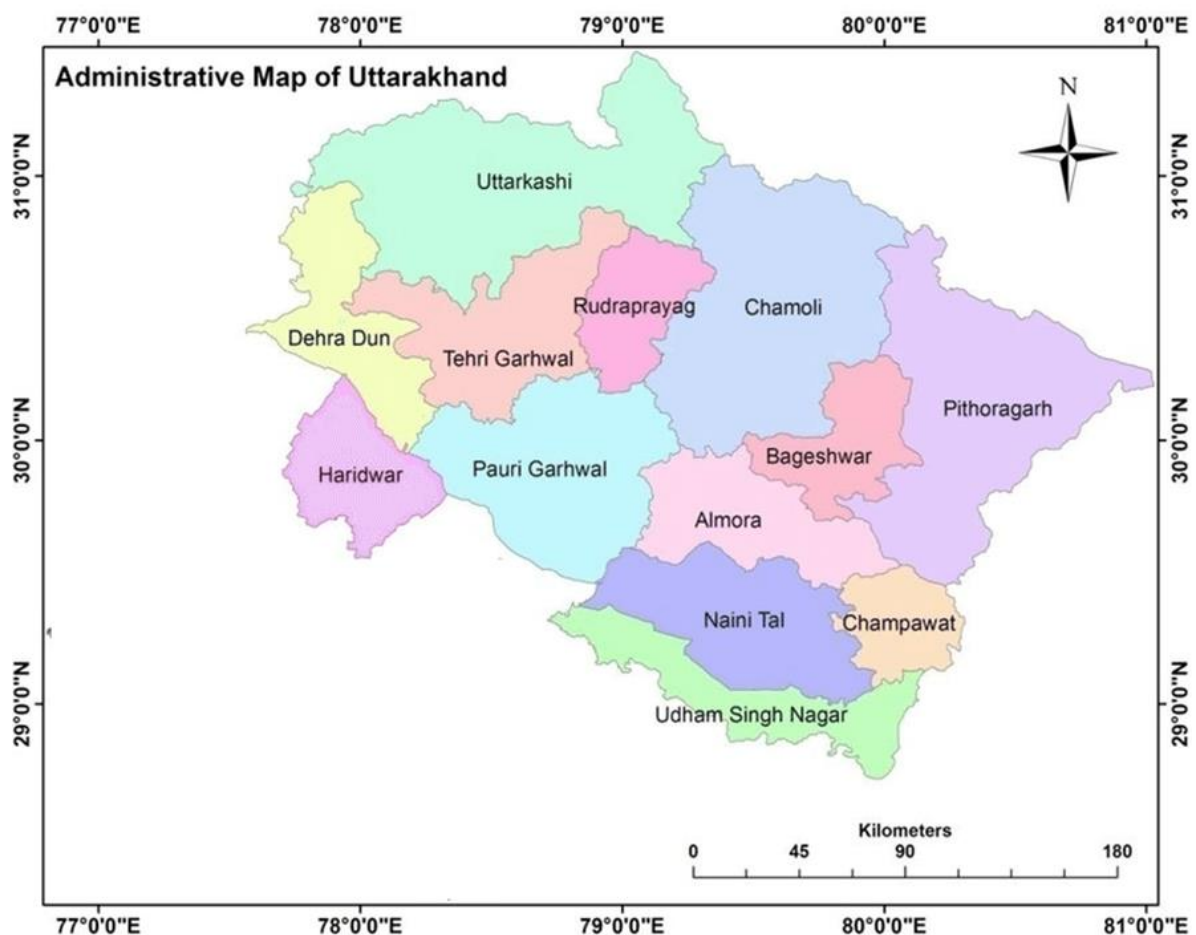


Figure 2. Administrative map of Uttarakhand showing districts; Source: (Negi and Kumar, 2016)

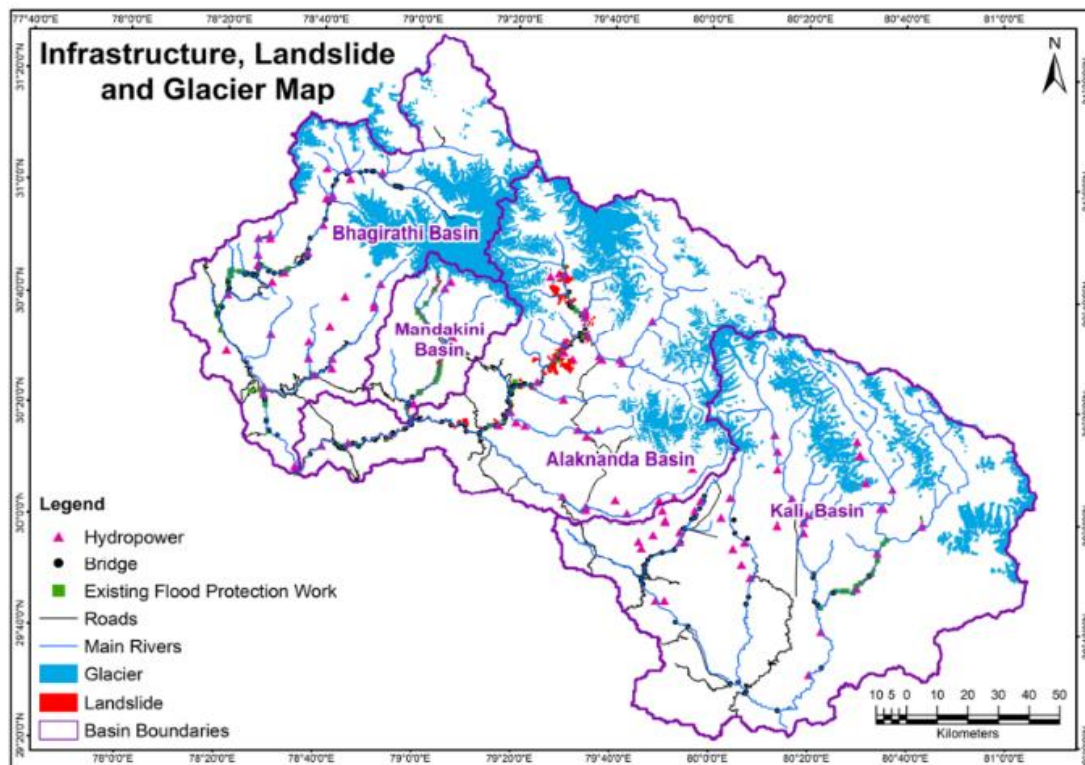


Figure 3. Simplified multi-layered map of Uttarakhand indicating landslide and GLOF prone areas; Source: (Ghosh et al., 2019)

1.1.2 Joint Rapid Damage and Needs Assessment (JRDNA)

The Indian Government in partnership with the Asian Development Bank and World Bank, in August 2013, fielded a damage and needs assessment mission aimed at carrying out a multi-segmental loss assessment that stimulated sustainable recovery-reconstruction; State's technical capacity upgrade, and asset resilience building against future disaster-climate risks. (Burkitt, 2019).

As a first attempt, it identified immediate and medium-term reconstruction needs; assessed infrastructural damages and provides a preliminary impact on housing, services and livelihood. Given the short time available for this rapid assessment and rapid emergency response being the priority, the figures are not definitive, yet served to guide the recovery efforts. It recommended for improving resilience of the State's infrastructure and Communities so as to enable them rising up to future risks (JRDNA, 2013). The Fig. 4 shows a glimpse of infrastructural damage and ensuing loss.



Figure 4. (Left) The aerial view of Kedarnath town post Chorabari GLOF and cloudbursts.; Source: Rautela, 2018. (Right) Connectivity damage, people stranded on Kedarnath-Rambara-Gaurikund axis; Source: (Venezuela, 2013)

1.1.3 Risk Reduction Investments

Accordingly, massive investments in the form of IDA as UDRP; IBRD as UDRP-AF; and federal assistance as SPA-R, were deployed in key public infrastructure such as strategic transportation network, educational institutions and hospitals, to build-them-back-smarter, augment State's response, and strengthen institutional-policy framework (Burkitt, 2019).

The GoI approved a special assistance package to the State. The sector-wise description and sanction order are provided in **Appendix IV and V**, that included relaxations in CSS guidelines, assistance outlays, and SPA-R (CAG, 2018). As part of multilateral assistance, the World Bank sanctioned IDA grant worth US\$250 million in 2014 and IBRD loan worth US\$120 million in 2019 through UDRP-AF; and Asian Development Bank sanctioned US\$200 million grant through UEAP in 2014. The respective Project Agreements and Financing Agreements are annexed as **Appendix X and XI** that included works concerning: (a) Resilient-Infrastructure reconstruction; and (b) Technical assistance and capacity building for Disaster Risk Management (DRM). The details of interventions undertaken in UDRP and UDRP-AF are appended (**Appendix VI, VII, VIII, IX**).

1.2 Research Question

First, the project claims to ascertain as to whether instituting the multi-hazard resilient CI such as bridges, roads, educational institutions and medical centres constructively influences the ease of access and quality of social services; empowers livelihood security; enhances Social Capital and wellbeing (SCWB); reduces income inequality; besides effecting progression in disaster preparedness; adaptive recovery ability and risk-consciousness of the society?

Colloquially, whether these act as the functional nodes that boost access to social-services, sustain livelihoods, smash regressive gender-differentiated stereotypes, foster inclusivist discourse, kindle risk-perception, catalyse economy, besides augmenting the coping abilities of community?

Second, whether the CI acts as an integrating link across the select United Nations Sustainable Development Goals (UNSDGs) as defined under *the 2030 Agenda for Sustainable Development* and the related Targets and Priorities of the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-30? As delineated in **Appendix XII**, the concerned Target Indicators under the former, relevant to this study, deal with 'Poverty Reduction' (Goal #1), 'Good health and wellbeing' (Goal #3), 'Education' (Goal #4), 'Reducing Income Inequality' (Goal #10) and 'Social Capital'. Correspondingly, those of the latter are 'Target' #4 and 'Priorities' #3 and #4, that aim at averting new and diminishing existing disaster risk, minimizing disruption to social services, business processes and increasing resilience (United Nations, 2015a, 2015b).

1.3 Significance and Research Objective

CI services constitute the core of the economy. Right from fulfilling society's most fundamental needs to promising a reasonable quality of life, these enable redistributive justice, workforce productivity, broadening of opportunities, and are crucial for any development outline. Increasingly, these structures are under performance burden to dispense buoyant and unswerving services, in the backdrop of speculative and escalating disaster-risks (Hallegatte, Rentschler and Rozenberg, 2019).

The State depends extensively on the infrastructure, for governance, and provisioning for goods and services. The growing reliance upon such complex interconnected networks and intricately fastened systems embolden vulnerabilities to interact and engender escalation cusps. The devastating impacts that ensue propagate through socio-economic systems (Pescaroli and Alexander, 2019). The recurrent financial setbacks on such assets, and so on livelihoods and business-processes endorse the need to evaluate performance levels of such assets and optimise investment decisions. Such risk-conscious approach is highly significant against the backdrop of estimated USD 7 trillion yearly infrastructure capital-spending required to attain the 2030-Agenda (Mizutori, 2019).

The resilience of CI system is a major factor not only for reliability of system as a whole, but the services and goods being provided to society. Assessing resilience, and its impact on development progression and risk reduction is therefore significant. And so, having the ever-evolving impact evaluation methods and policy appraisal tools in place, assume substance to minimize the potential mortality, livelihood losses, asset damage and high ex-post reconstruction-recovery cost (Rehak *et al.*, 2019).

The project seeks to justify and develop the rationale for drawing in public-private investment towards galvanizing the critical public assets and key lifeline buildings as a priority obligation. It will help ascertain as to whether RRI in CI translate to more resilient and prosperous societies. (OECD, 2017a). Furthermore, the results may encourage the regional development planners to authenticate project-assessment procedures and demonstrate to the decision-making executive that the preventive ex-ante investment in CI is much more constructive for the economy and society. Besides strengthening the outcome evaluation of ongoing projects, it will aid in examining the cost-benefit ratio or the Impact Factor of prospective RRI. In short, it will intensify embedding Disaster Risk Reduction (DRR) into development, and Science into policy decisions.

The realisms about infrastructure, disaster-risks and development are widespread and deeply rooted. The unenlightened beliefs or misinformed perspective every so often are the grounds for erroneous actions that lead to preventable mortality and suffering, predominantly when these are held by public officials and policy practitioners, responsible for policy plan, investments, and managing disaster-risks and humanitarian emergencies (Alexander, 2007). Paradoxically enough, their perceptions

have not been analysed extensively, recommendations not incorporated comprehensively and veteran learnings not fed back into the risk architecture scrupulously (McDaniels *et al.*, 2015). This study addresses the issue by examining senior disaster-risk practitioners and experts as regards DRR, CI, Development Goals and Resilience Paradigms. The findings from the viewpoints and understanding of the respondent cohort will certainly go a long way in designing risk-informed and inclusive DRR strategy and institutional policy framework.

2 Literature Review

2.1 Critical Infrastructure and Resilience

CI is defined as physical structures, facilities, and networks that deliver services indispensable to the social and economic functioning of a society (OECD, 2019). CI involves elements central to the operation and processes of society. These are dominant essentials in an extensive grid of risk (Alexander, 2013). The susceptibility of CI may perplex the advancement of events in relation to society's feedback loops. This warrants inclusion of these escalation points and social nodes in the preparedness phase itself (Pescaroli and Alexander, 2016).

CI is the mainstay of modern-day society and cater to many of the cardinal services. So, its security is indispensable for resilience of the community. The discontinuities in CI owe their causation to environmental hazards, technological calamities, malevolent strikes or others, that can debilitate economy, health and security of a community or nation (European Commission, 2019).

Over the last quarter of the century, the CI setbacks and gaps have steered innovative and forward-looking changes in outlooks and approaches to emergency management. The safety and efficiency of conveyance systems, connectivity and public buildings are preceded by resilience concerns as priority (Lewis, 2020). Episodes such as 09/11 terrorist attacks, 2004 tsunami in Indian Ocean, 2005 bombings of London and Hurricane Katrina that too struck in 2005, spotlighted security strategies to protect CI. Today, there is an enlarging collective unanimity on the necessity to strengthen, expand and maintain CI (Pescaroli and Alexander, 2016).

The nations all across confront a formidable challenge to understand new disaster-risks; and their impacts on CI. The compromised CI systems subvert incident response, recovery and increase reconstruction cost. CI disruptions escalate crises by creating cascading effects and exponential proliferation of secondary crises. Hence CI requires a certain level of in-built reliability as well as redundancy (Pescaroli and Alexander, 2015; Suppasri *et al.*, 2021).

Lloyd-Jones opines that climatic-extremes are warranting a re-prioritization of CI resilience in development agendas, placing strong focus on prevention and mitigation. This emphasises creating a safer environment through enhanced resilience (Lloyd-

Jones, Davis and Steele, 2016). Resilience reduces vulnerability, absorbs disruptive effects, and enhances element's ability to recover. It has been adapted widely into engineering, economics and social-sciences fields. It brings together disaster and climate risks in city-resilience framework. The infrastructure resilience has drawn considerable attention of research in the disaster domain (ARUP, 2014).

The recent research avers savings of 4 to 105 USD for each USD expended into resilience. Tackling primary disaster risk causations through preventive learnt investment is more rewarding than prime dependence on ex-post reconstruction. A risk-conscious and inclusive disposition is essentially vital in the backdrop of the projected USD 7 trillion yearly investment needed in infrastructure for achieving the Global Agenda 2030 (OECD, 2017b; FM Global, 2018).

The last decade saw extensive research going into evaluating CI resilience. The newest perspective is on fostering engineering resilience of CI to reinforce urban disaster-resilience (Nan and Sansavini, 2017; Cai *et al.*, 2018). There have been attempts at linking resilience-planning and risk-analysis and develop means to measure resilience (Linkov *et al.*, 2013). (UNDRR, 2019a) proposes a CI interdependency analysis framework and leverages system-level analyses to illustrate cascading failures, and prioritize resilience strategies in the perspective of sustainable development.

So, as regards resilience quantification, the approaches are mostly system based and miss the elementary evaluation that is imperative to ensure systemic reliability and support resource allocation towards strengthening resilience (Eusgeld, Nan and Dietz, 2011). To that effect, Rehak *et al.* introduced CIERA methodology to assess elemental resilience, statistically evaluate robustness and recovery ability post a disruption (Rehak *et al.*, 2019). Argyroudis *et.al* however, argues that currently, no integrated framework accounts for multiple hazard-sequence, their impacts, and resilience quantification; as claimed in existing research (Argyroudis *et.al*, 2019).

As evident, the works above observe the advancement of a cascading disaster as channelled by the vulnerability of CI, and so emphasise upon addressing pathways for system failure and interdependencies among CI (McDaniels *et al.*, 2015).

2.2 Social Capital and well-being as a Development Goal

SC is a suite of common values that permits individuals to function and operate together to realize a shared purpose. The concept signifies members' ability to band and live harmoniously in society (Nugroho *et al.*, 2022). It requires a relatively lower cost than built capital for effecting wellbeing. The positive relationship between SC and subjective well-being compels it to be considered in improving aspects of life (Puntscher *et al.*, 2015).

The SDG#3 of the Agenda-2030 is society's well-being, which is strived for by increasing built-capital and social-services. Other form of capital that strengthens community' bonds and improve well-being is termed as SC. The principle is that an individual must like his own life to have high satisfaction levels (Diener, Oishi and Lucas, 2009).

Piao *et al.* investigates the effect of SC on creating sustainable communities. With reckless urbanization, a better half of the world's populace is anticipated to reside in cities by 2050; thus, founding sustainable cities (SDG #11) has to consider improving people's well-being. Since long, it is being investigated in economics, social sciences and sustainability management (Piao *et al.*, 2022). All its dimensions—community ties, trust, security—get together to increase life satisfaction (Dale and Newman, 2010).

In fact, the SDGs signify the interrelations among natural resources, social-capital and economic returns, with a coherent outlook on wellbeing. It is highly improbable to achieve the SDGs unless the sustainable wellbeing prevails pervasively (Costanza *et al.*, 2016). A new post-GDP economy centring around SCWB, instead of material output or monetary yield is already emerging, creditable to the coming together of policy reformations and economic swings. Wellbeing indicators are missing links in the governance-economy yoke, that are indispensable to stimulate a sustainable development paradigm for a worthy Anthropocene (Fioramonti, Coscieme and Mortensen, 2019).

2.3 Interrelation between Sustainable Development Goals and Sendai Framework for Disaster Risk Reduction (SFDRR)

At the 3rd United Nations World Conference on DRR in March-2015, the Nation-States reiterated commitment to take on DRR and resilience building with a refreshed

earnestness; and address underlying drivers of disaster-risks through informed capital spending for contributing to sustainable development (United Nations, 2015a). Disaster-climate risks significantly impede advancement towards sustainable development. The exposure all around has grown faster than decrements in vulnerability. All developing regions—where disaster fatalities and damages are excessively higher—are faced with increased developmental challenges (United Nations, 2012).

DRR is an integral part of socio-economic development, and its sustenance. SFDRR, the first agreement of 2030-Agenda, aims to address fundamental causes of disaster-risk and safeguard development advances (UNDRR, 2017a). Progress in implementing SFDRR therefore naturally complements SDGs. In turn, progress on SDGs builds community resilience to disasters. There are a number of targets across 17 SDGs that directly inform DRR. Conversely, all seven global targets of SFDRR are vital for achieving SDGs (UNDRR, 2020a).

Target 1.5 of SDGs provides for reducing vulnerability of the poor to disaster-climate extremes. The SFDRR demands to strengthen resilience against the impacts thereof. Securing risk-proof development, can alleviate perpetual poverty. Additionally, target 3 aims to strengthen capacity of developing countries, for early warning and health risk-reduction, which directly feeds SFDRR related provision to reinforce Early Warning Systems (EWS) and health-risk management during disasters. The target 4 aims to upgrade safe and inclusive educational facilities. Correspondingly, the SFDRR too provides for disaster-resilient educational facilities (UNDRR, 2015). Also, several SDGs contribute to reducing risk even where DRR is not explicit. The Targets and Indicators under SDG#11 (safe-resilient cities) and SDG#9 (building resilient infrastructure) reiterate the interrelation between DRR and sustainable development (UNDRR, 2019b).

The Sendai Framework cites 23 specific sustainable development related recommendations across its Preamble, guiding principles and the priorities. It leads the State's endeavours to embed disaster-risk into its policies, investment and action (United Nations, 2015a).



Figure 5. Three categories of managing risk as recommended by the Sendai Framework. (Source: UNDRR, 2017b)

Reducing existing risk and managing residual risk is not only important to achieving the goals of SFDRR but realizing a resilient and sustainable world (Fig 5) (UNDRR, 2017b). Disasters are occurring swifter, staying longer and impacting harder. Those struck severest are those who have contributed in least proportions to instigate these substantial deviations – the deprived (IPCC, 2022). So, vulnerability is comparative and non-linear. The socio-ecological fragility and differential impacts of hazards – is still not a systematic constituent of the risk equation (Diwakar *et al.*, 2019).

Thus, the fundamental drivers of risk—poverty, income inequality, illiteracy, informal urbanization are as much a causal factor of loss, as the hazards themselves (UNDRR, 2019b). The SFDRR, SDGs and Paris Agreement together constitute a more comprehensive resilience framework, as developing resilience require acts encompassing development, humanitarianism, climate sustainability and DRR as shown in Fig. 6 (UNFCCC, 2017)

The overall character of risk requires system-based planning for effective confrontation against risks, and safeguard wellbeing and prosperity of present and future generation. Justifiably, SFDRR is espoused as the connecting link across all 2030 agreements, whose four priorities-configure a distinctive path to robust sustainable development. The cross-sectoral Agenda-2030 is depicted in Fig. 7 (Aitsi-Selmi *et al.*, 2015; Mizutori, 2019).

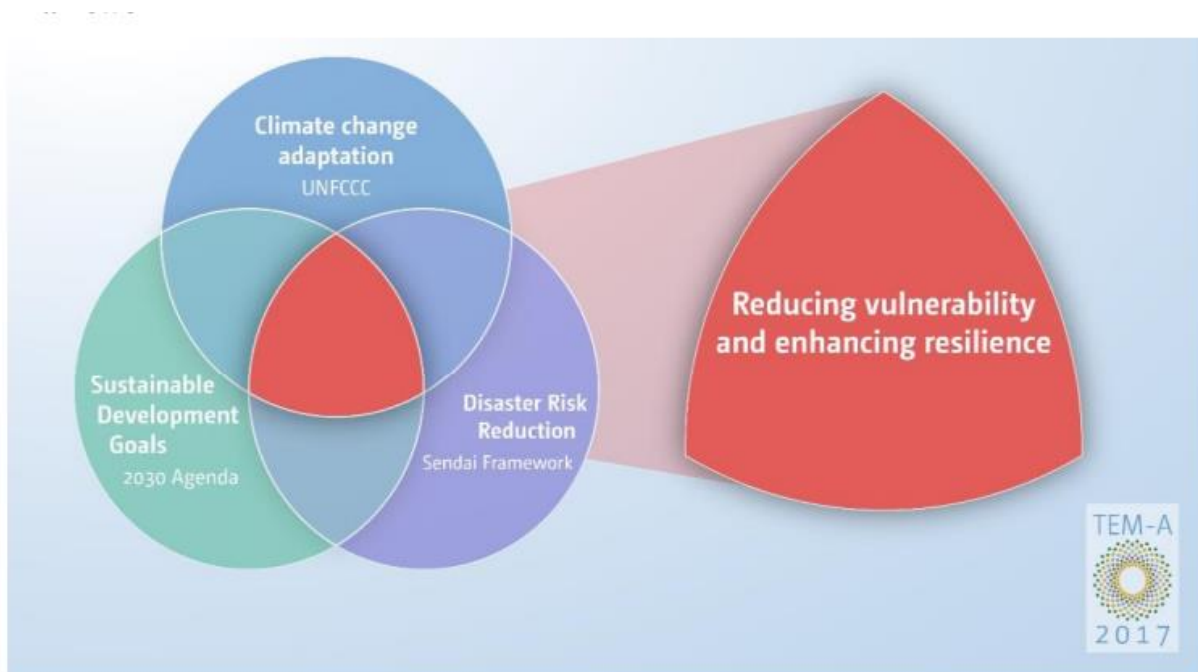


Figure 6. The intersecting ground of climate change adaptation, sustainable development goals, and disaster risk reduction. Source: (UNFCCC, 2017)

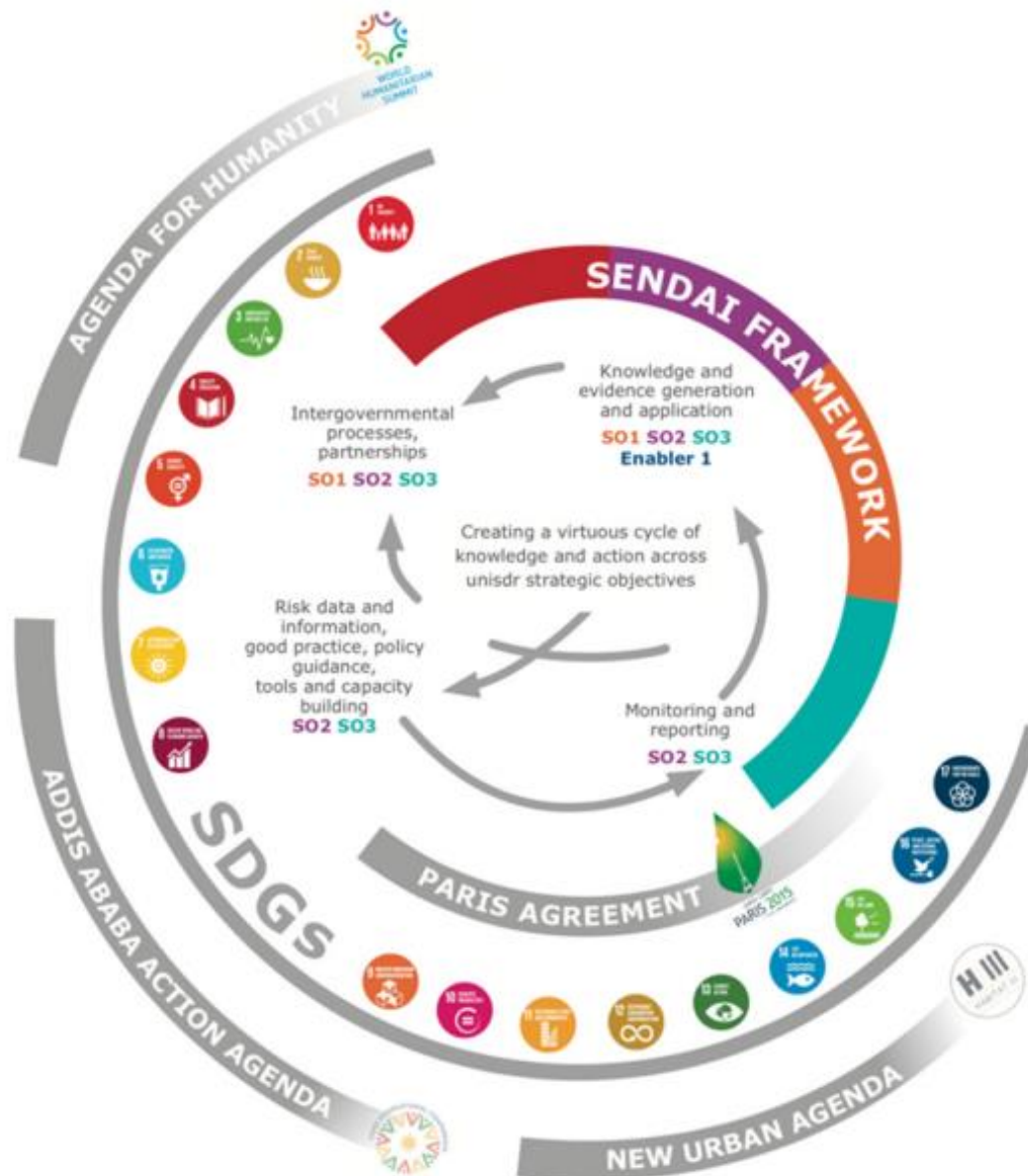


Figure 7. Coherence between the 2030 Agenda Agreements. Source: (Mizutori, 2019)

2.4 Practitioners Approach for Evaluation of Infrastructure Resilience Projects

CDRI states that resilient CI does not purely result from availability of development finance. While the Government is predominantly responsible for prioritizing resilient CI, the investors and operators are equally responsible for embedding resilience across project lifecycle. The investment benefits are only realized when projects provide tangible benefits to society (CDRI, 2021).

Ferrari defines reflexive governance as a tool for building resilience and sustainable development. It can establish redundant CI systems and hence sustainability (Ferrari, 2020). In fact, the resilient infrastructure that minimizes IFIs are the most elementary components of disaster resilience in built-up area and merit Practitioner's consideration (Chang *et al.*, 2014).

Hence the role of practitioners and decision-makers to advance pre-emptive DRR interventions, and fuse Science and Policy for risk-informed development is important (McDaniels *et al.*, 2015). They have been the ones working rigorously with the community; managing the incident response; administering hazard-resilient erections; and witnessing the temporal changes in quality of infrastructural services.

2.5 Research Gap

Subsequent to instituting RRI in roads, bridges, schools, hospitals in the disaster affected areas in the State, highly significant it is to assess their bearing on the development goals and risk reduction as envisioned in the UNSDGs and SFDRR. The review revealed fairly adequate literature that endorses the inalienable nexus between SDGs and DRR. It was held that DRR is positioned at the core of the world's most grave affairs: changing climate, unplanned urbanization, health pandemics, displacement and hence the development. However, it couldn't articulate any work that could demonstrate the said nexus pragmatically or experimentally, much less wherein the participants could be the Government officials and MDB experts who practice policy, make decisions, manage field and analyse disaster-climate risks themselves.

In addition, there is limited work concerning interrelationships between infrastructure resilience and social issues linked to development or reducing risk. The prevalent ideas are about resilience measurement-assessment frameworks, or the priority setting techniques regarding infrastructure resilience. These are customized, asset-distinctive, and vary in space and time.

The project therefore, aims to address this gap and aid in developing a method that can support in gauging change detection in, per capita income, access to social services like education and health, social capital and security, resilience levels of assets and community, as well as the risk sensitization of the stakeholders, as brought about by resilient CI. The distinctive particulars of participants, spatial-landscapes,

risk-contour, socio-economic milieu and risk governance architecture of the region, inspire undertaking the pilot initiative.

Investigating such correlations assume significance in the backdrop of rising significance of development and DRR in policy plans, budget outlays allocation and lateral collaborations. Hence, consistent study, ingenuity and comparative case studies constitute crucial progression in this area.

3 Methodology

This research utilises a semi-quantitative, deductive approach for collecting and analysing views of senior Disaster-Risk practitioners on impact of CI on development and risk reduction. (Lewis-Beck, Bryman and Futing Liao, 2004). The methodology gets steered in the following way:

3.1 Recruitment and Data Collection

A cross-sectional study was carried out in which participants were recruited through 'online Forms' (stored in UCL OneDrive) from 14-04-22 to 26-05-22. The survey was taken by 84 public officials and MDB experts, who are risk practitioners and have fair understanding of pre- and post-disaster scenarios for CI. Convenience Sampling method was used due to its efficiency in gathering data within a limited timeframe and access.

The key informants constituting the survey have been (i) 15 Decision-makers-cum-Administrators who work rigorously with the endemic community; (ii) 21 Disaster-Managers and First Responders who man and operate the DEOCs and SEOCs, are at the frontline of response-relief; (iii) 18 bridge-road engineers who designed and supervised the hazard-resilient erections and are responsible for Operation and Maintenance; (iv) 21 User-agencies' professionals such as teachers, doctors, education-officers, health-enforcement officers as witness to the temporal changes in quality of public-goods; and (v) 9 MDB professionals who nurtured the plan, financed and monitored the RRI.

Geographically, the devastation was predominant in the five districts of the State, that justified premising the survey in the same. Indeed, it was tough to directly approach the local community on account of the Covid-19 restrictive settings, limited research time and low digital-literacy among the masses in rural hill landscape (Singh, 2019; Singhal, 2022).

3.2 Questionnaire Design

A series of 63 *pre-coded (closed-ended) and 3 open-ended questions* were posed to ascertain the development gains and risk-reduction advances subsequent to infusing RRI (**Appendix I and III**). The former was distributed among five development themes- Education; Health; Per Capita Income (PCI); SCWB; and SFDRR, which were

strived to bear consistency and safety against bias (Creswell 2014; Bryman 2016). The latter, however, aggregated the reflections of 12 senior civil-servants, who have been the lead planners and administrators for the said RRI and DRM in the State.

It was endeavoured to relate the questions to the 'Target Indicators' concerning UNSDGs, and Priorities under SFDRR. Additionally, these were based on common understanding of the forms the concepts in question assume, besides anecdotal and qualitative evidence. While some of the questions directly relate to the CI, its resilience and continuity; the others to community' risk consciousness.

3.3 Data Analysis

A five point ordinal Likert scale is used to quantify the responses from 1 as 'Strongly Disagree' to 5 as 'Strongly Agree', with a middle point denoting a neutral response. Each response was scored from 1 to 5 and then all the scores are aggregated with or without regard to respondent-category to measure collective stance towards phenomenon under study (Bryman, 2012).

The response continuum for each statement is a linear scale. The data obtained was translated to numerical scores to undergo analysis, and presented graphically (Bryman, 2012). The results collected were put to descriptive analysis and data visualization, based on mean and standard deviation (SD) (**Appendix II**). The *Likert Diagrams* and *Error-bar charts*, enabled through RStudio desktop (*ggplot2* package) version 1.4.1717, aided in drawing inferences and making comparisons within and across the respondent-categories (Chang, 2013; RStudio, 2021). **Appendix XVI** contains the tables showing short-forms for the questions, as used in the diagrams. The open-ended reflections, being less in number, were analysed manually to collate and synthesise the perspectives. Thus, a mosaic of statistical and descriptive results and perceptive ruminations were obtained.

3.4 Ethics Statement

The author asserts that all procedures used, as approved by UCL Ethics-Committee (code:22801/001), comply with the ethical standards of the relevant national-institutional committees on human experimentation and the Helsinki Declaration of 1975, as revised in 2008. Prior to taking survey, participants provided informed consent which was recorded digitally. This study did not include minors; was non-

sensitive, non-intrusive and impersonal; did not involve any field visit; comprised public officials as the only participants; and did not induce any undue psychological stress.

4 Results

This section provides the aggregated theme-wise response distribution, followed by the one sensitive to respondent-categories across the themes. The extent of agreement or disagreement is presented by graphs and interpretations.

4.1 Response Comparison among Development Themes

Irrespective of respondent category (RC), the Likert diagrams subdivide, for each statement, a single bar into several colours, each representing a Likert-score category (**Appendix XIV** contains the Rstudio-code). The coloured subdivisions have size proportional to the number of respondents choosing the score the colour represents. The responses lie on either side of the neutral line (reference at $x=0$) (Verzani, 2012). The extent of polarization, however, will be able to be detected in the next section dealing with Error bar plots, that decode divided opinion or extent of unanimity.

4.1.1 Education

Distinct patterns emerged from the study. Overall, a dominantly positivist trend towards agreement is observed (Fig 8). Every single proposition garnered concurrence and consent in majority (larger-bigger constituency) with varying degrees though. In fact, efforts made in designing the questions encountered discernible success as, barring the 'Safety Concerns', all others demonstrated absolute majority.

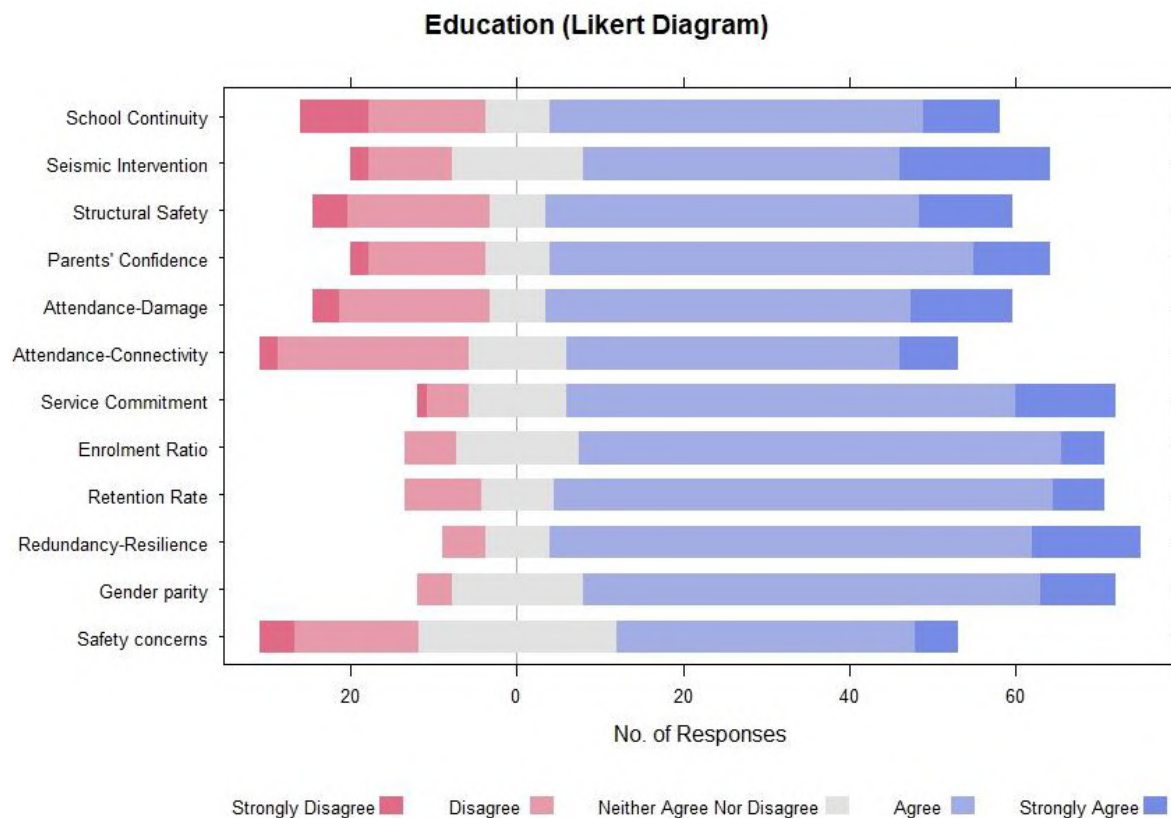


Figure 8. Likert diagram for Education theme (propositions 1 to 12)

In addition, the queries to ascertain upgrades in the Service Commitment, Enrolment Ratio, Retention Rate, Redundancy-Resilience attainment; and Gender parity could see strong validation and approval by at least 75% of respondents. Particularly reassuring it was to observe the high confidence posed, by more than 2/3rd of them, in enhancements related to 'Structural safety; Parents' confidence; Teachers' attendance'.

Though in minority, comparatively more conflict and dissension were found in 'School Continuity; Staff attendance-connectivity; and Safety concerns', wherein the agreement proportion couldn't attain more than 50%. Further, although the non-commitment (indeterminacy) to varying degrees is pervasive throughout, it is inadequate to influence the results, except that in 'Safety Concerns' which registered at 25%. As evident, the results broadly endorse the fact that positioning CI (roads, bridges and schools in this case) did result in improving the concerned indicators as envisaged in SDG #1.

4.1.2 Health

The results to 11 propositions (Fig 9) suggest that all were agreed upon undoubtedly, though with differing extent of disapproval and indefinity. More specifically, the 'Redundancy-Resilience; Patient Influx and Community Confidence'; evoked overwhelming concurrence, at 75% in the least. Incidentally, these three happen to be the leading objectives behind executing RRI in infrastructure of strategic significance for the disadvantaged community.

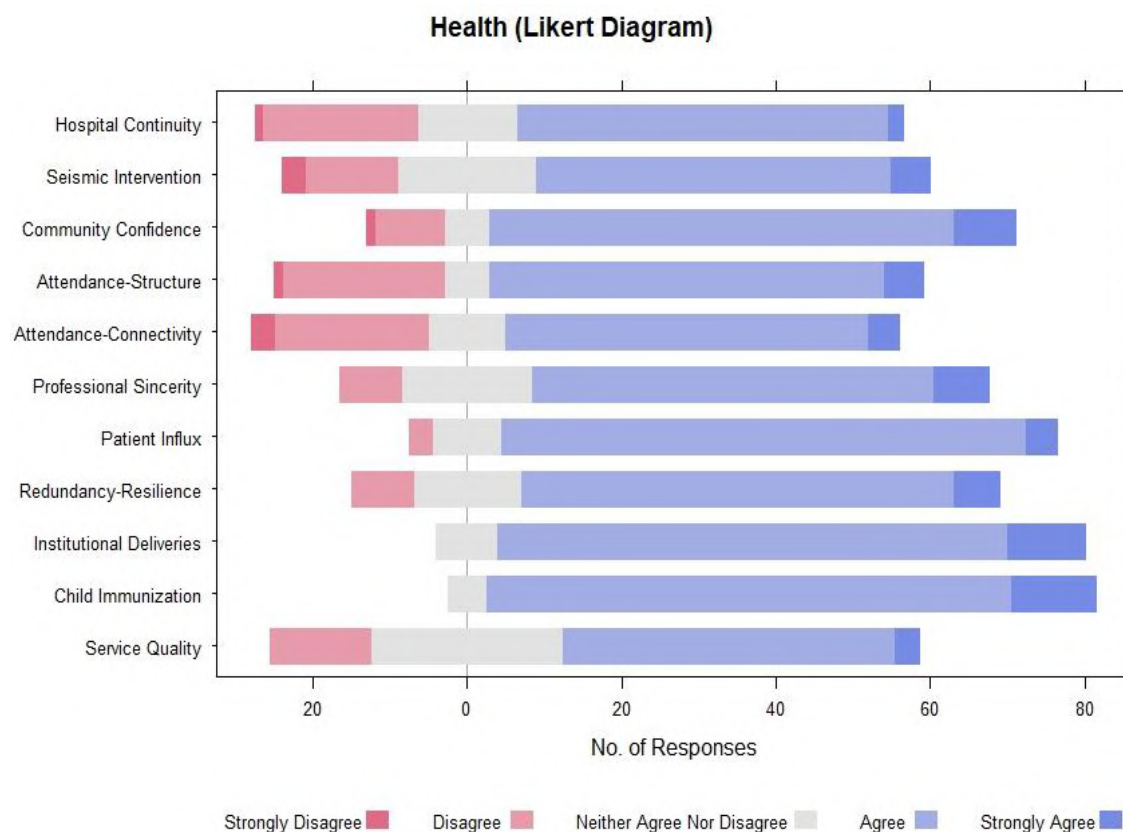


Figure 9. Likert diagram for Health theme (propositions 13 to 23)

Strikingly, the 'Child Immunization' and 'Institutional Deliveries', which constitute flagship indicators for SDG#3 didn't elicit even a slightest disagreement. This feeds volumes into assessing the cost-benefit ratios of capital investments in such critical public institutions. With indeterminacy and disagreement taken together, higher proportions of divergence and incongruity, oscillating between 50-60%, were found in 'Hospital Continuity; Seismic Interventions; Staff Attendance-Connectivity and Service Quality'. Further, though a minority, the 'Service Quality' witnessed relatively maximum

indeterminacy at 25%. Hence, in general, the results certify that the interventions were worth investing for (roads, bridges and hospitals in this case), that did make the concerned indicators look up as envisaged in SDG #3.

4.1.3 Per Capita Income

The Per capita Income is an influential index in the framework of study since it stimulates two SDGs, the Poverty Reduction #1 and Reduced Inequality #10. It displays, to a certain degree, a disparate and dissimilar trend as shown in Fig 10. The agreement levels are not as uniform and encompassing as seen in the previous ones. Specifically, the progresses in 'Fuel efficiency, Passenger Transportation, Freight Transportation and Essential Supplies Continuity' were consented to by about 33% only. In fact, the latter proposition concerning Essential Supplies maintenance recorded disagreement in absolute majority at 60 %.

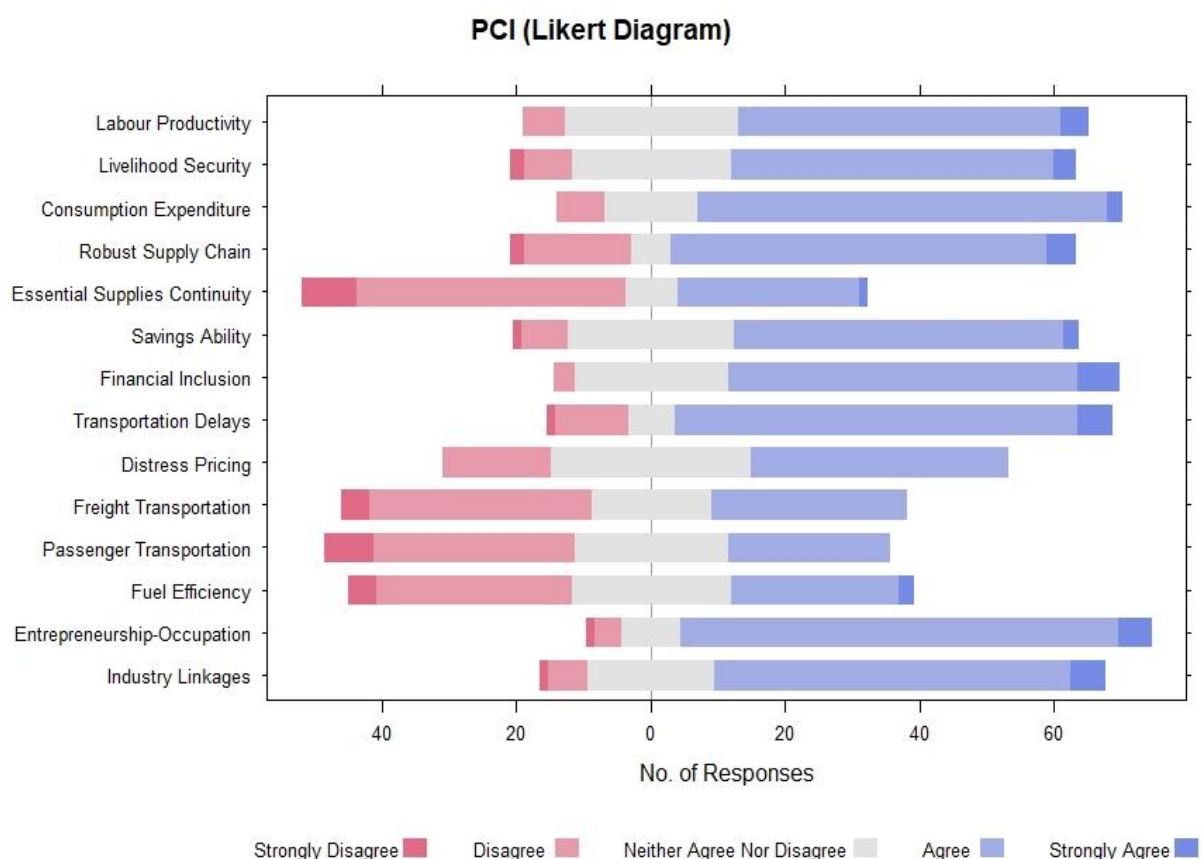


Figure 10. Likert diagram for Per Capita Income theme (propositions 24 to 37)

Barring above, all others registered consent in absolute majority. Indeed, the propositions such as 'Entrepreneurship-Occupation; Financial Inclusion; Savings Ability; Supply Chains; Consumption Expenditure and Labour Productivity' distinguishably recorded least disagreements wherein 60% (about 3/5th) assented to the propositions. These indices, in fact, make up the crucial standards for defining the said SDGs #1 and #10. And so, on the whole, the trend is demonstrative of corroborating the growths in the indices representing PCI.

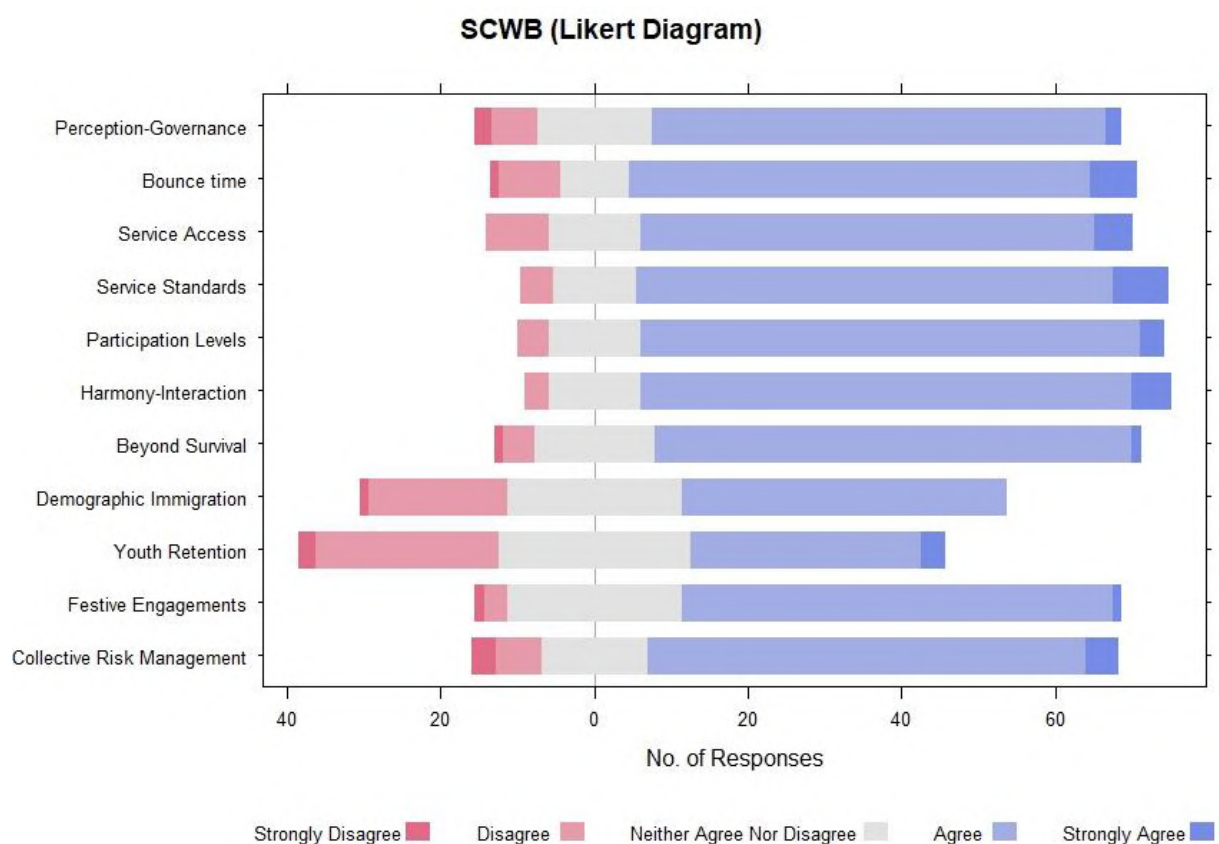


Figure 11. Likert diagram for Social Capital and Wellbeing theme (propositions 38 to 48)

4.1.4 Social Capital and wellbeing

Except the two queries that ascertained the increase in retention of youth and reverse migration into the region, all others exude absolute majority in approvals, at least 70%, as shown in Fig 11. However, it can't be discounted that the former two too registered majority in relative terms (more than 1/3rd), wherein the disagreement and

indeterminacy show up in competing shares. So, there doesn't exist any proposition that faced discontent and negation in dominant proportion.

Further, coupled with the buoyant agreement levels observed across-the-board, the abject share of disagreement, at less than 5%, as exhibited in 'Festive Engagements; Harmony-Interaction; Participation Levels and Service Standards' are indicative of the benefits accrued from the RRI's infused in CI. Hence, in general, the diagram confidently presents an affirmative trend towards agreement towards all the 11 propositions.

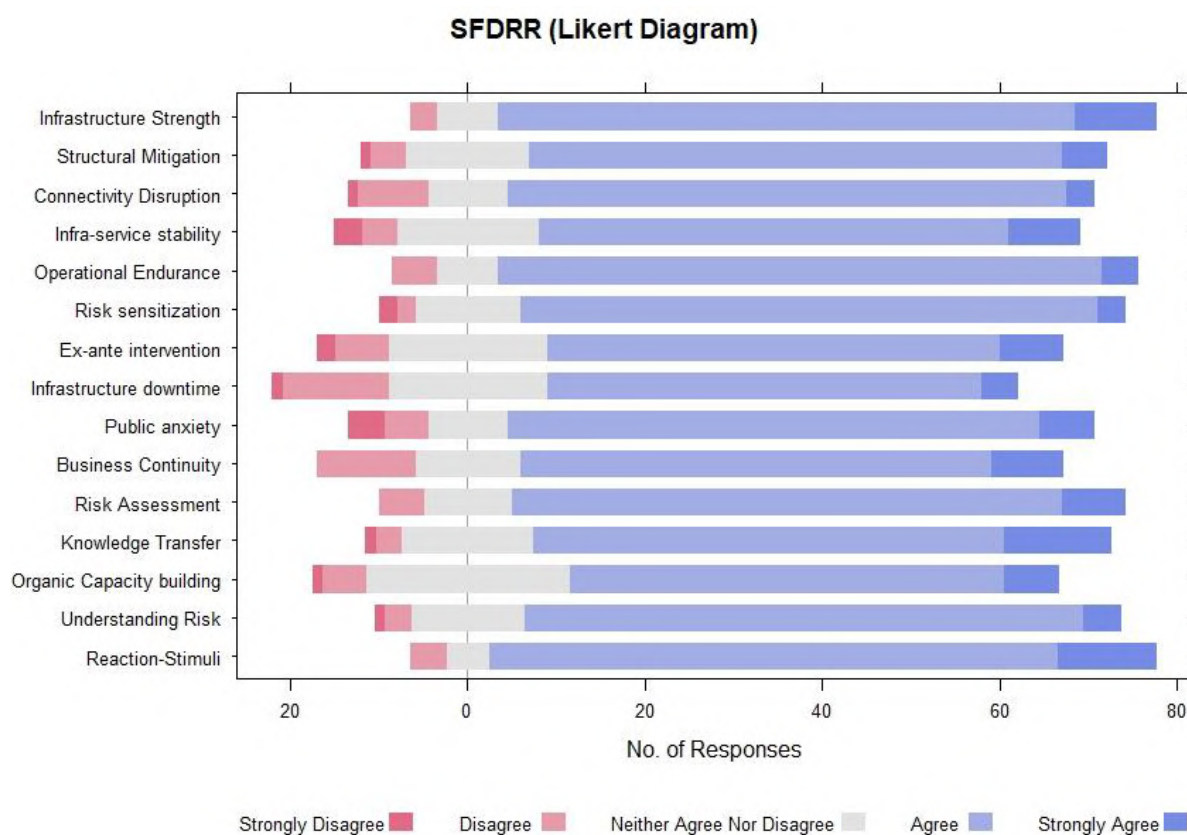


Figure 12. Likert diagram for Sendai Framework theme (propositions 49 to 63)

4.1.5 Sendai Framework for Disaster Risk Reduction

The Fig 12 illustrates that every single proposition garnered concurrence in absolute majority with varying degrees though. In fact, labours infused in crafting the questions met with fair level of achievement, as the response pattern exhibited consensus, reasonable uniformity and consistency.

The queries to determine developments in 'Reaction Stimuli; Risk Assessment; Risk Sensitisation; Operational Endurance; and Infrastructure Strength' garnered strong validation in proportions of more than 80%. Of particular interest was the emphatic affirmation, at more than 75%, posed in 'Understanding Risk'; Knowledge Transfer; Ex-ante interventions; and Infrastructure Strength'. These ideas relate closely to the Targets and Priorities of Sendai Framework and therefore identify themselves closely with the basic structure of SFDRR.

Though in minority, poised at 15%, the disagreement was found in the responses to 'Business Continuity; and Infrastructure Downtime', comparatively more than others. Further, the non-commitment (indeterminacy) is though pervasive all through but not adequate worth judgement. As evident, the results endorse the fact that positioning CI did result in improving the Target#D and Priorities #3 and #4 of SFDRR.

4.2 Response Comparison among the Respondent Categories (Themewise)

Since the database consists of 5 development themes and 84 respondents, so a more thorough construal requires carrying out comparative analysis across the RCs both within and transverse the themes. It is accomplished through plotting theme-wise error-bar charts, across the RCs (**Appendix XV** contains the Rstudio code) (Chang, 2013)

The points on the graphs represent the mean values of data and the vertical bars indicate ± 1 SD. These figures signify the extent of spread or polarization, in the responses to a particular statement. Clustering around a value of 3 represents an indeterminate response, whereas a mean value close to 3 and a large SD indicates that the respondents feel strongly either way.

4.2.1 Education

In general, the mean values of the aggregate responses obtained in the Education sector (defined by 12 propositions) lie largely between 3 and 4.5. So, a majority of the aggregate responses range from some agreement to definite agreement, with a few being polarized on either side but not many indeterminate. However, not a single proposition exists which any of the RC disagree with, much less strongly disagrees with. So, it suggested a positivist trend towards agreement. A few propositions received non-committal responses; majority of these got strong opinions. (Fig 13)

At first, the Engineers agreed much more strongly than other categories across the propositions. With the mean values hovering around 4 and SDs being confined above the neutral line (at score 3), the aggregate responses clocked definite agreement except in propositions ‘Staff’s Attendance-Connectivity and Safety Concerns’, that mustered some agreement, still stronger than other categories.

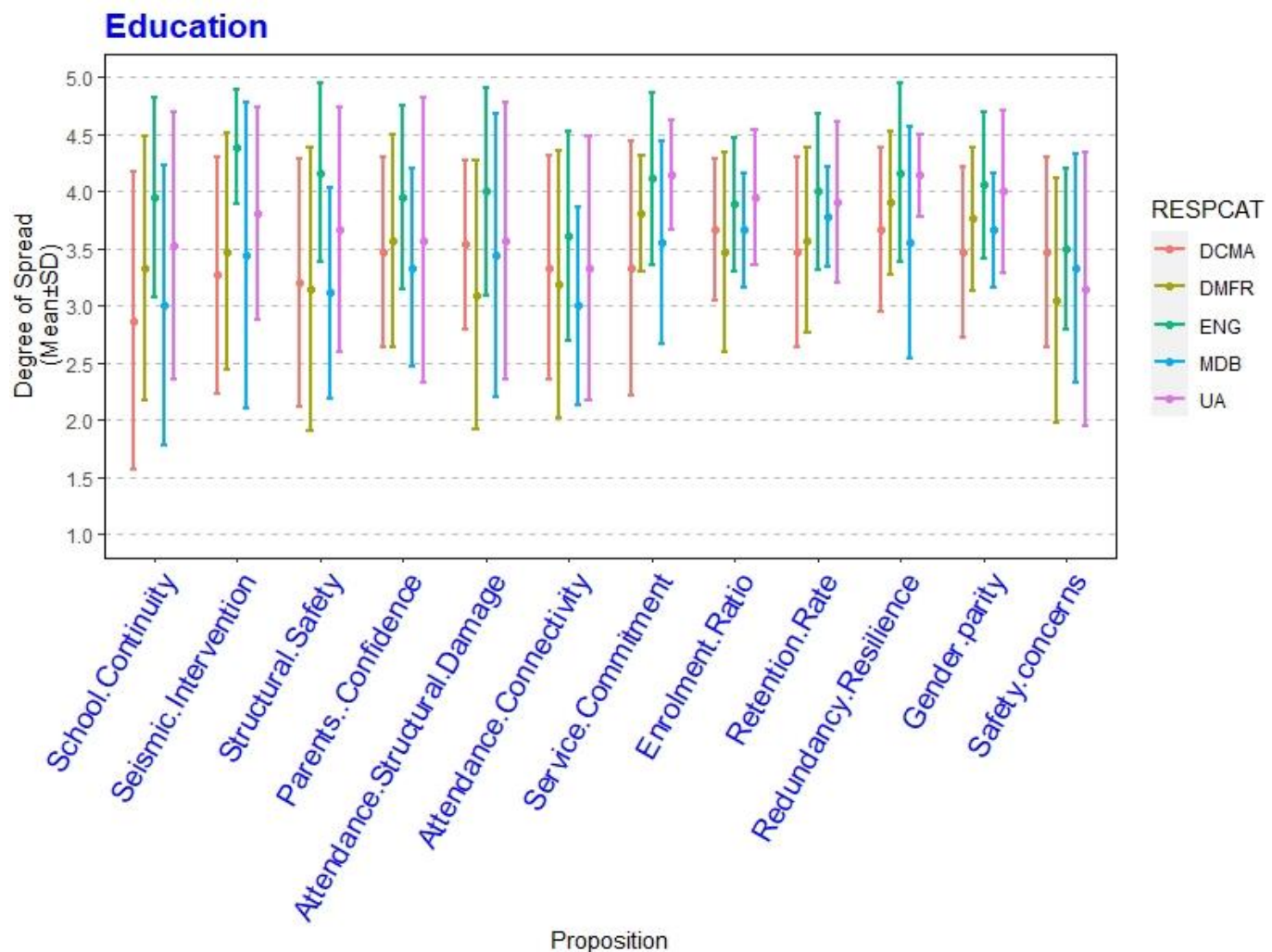


Figure 13. Error bar plot for Education theme (propositions 1 to 12) drawn through ggplot in Rstudio

This unwavering affirmative attitude owes its origin to the sense of belonging and attachment the Engineers had with the structures directly supervised. As the architects and controllers, they identify themselves with these interventions that were materialised through their skills and extensive man-days.

In addition, it is stimulating to look for insignia of agreement among the respondent groups. Overall, there was definite agreement among the majority of RCs who

demonstrated unequivocal support for 'Service Commitment; Enrolment ratio; Retention rate; Redundancy-Resilience; Gender Parity'. The mean values of the aggregate responses of the said categories fall within 3.5-4.5 and variations are least. The ones not following the suit are Decision-makers and Administrators (DCMA) & Multilateral-Development Bankers (MDB); Engineer; DCMA & ENG; MDB and DCMA; whose responses pushed the figure to below 3 for the respective propositions. So overall, these still express some agreement.

As greater part of the respondents sided with believing these statements, therefore these can be considered as the strongest and enduring propositions. These seemingly surpass margins of profession and academic qualification, so may be considered as universals. Only 2 propositions 'Structural Safety; Attendance Connectivity' met with strictly indeterminate responses by the MDB. Being the funding agency, it is natural, to be demanding and finicky. In fact, exercising cautious optimism is warranted to contemplate and effect consistent improvements in project planning and execution.

However, the 'School continuity; Structural safety; Attendance-Structural damage; Attendance connectivity; Safety concerns' encountered distinct polarization by DMFR, with the same being visible in DCMA's responses to the former two. This is because the two RCs are at the frontline of service delivery and emergency-response. Being in direct contact with public, they are aware that quality of civic-service delivery is largely personality oriented rather than system driven. They may hold that education indices are not as much a function of the structural strength or hazard resilience as of local priority and teacher's professional sincerity. The fact that they are privy to the reality that RRI's are not the sole influencers of Education, too shares a part of the explanation.

4.2.2 Health

Overall, the pattern is not much different from that in the Education sector. The mean values of aggregate responses (11 in total) lie mainly between 3 and 4.5. Fig. 14 shows a majority range from some agreement to definite agreement, with not many being polarized or indeterminate. The propositions receiving non-committal and polarized responses such as 'Professional Sincerity' by UA and 'Hospital Continuity' by DMFR and MDB exhibited indeterminacy; whereas 'Seismic Intervention' by MDB, 'Staff Attendance-Structure and Connectivity' by UA demonstrated divided opinion

(polarization). However, not a single proposition exists which any of the respondent-category slightly disagree with. It suggested a positivist trend towards agreement.

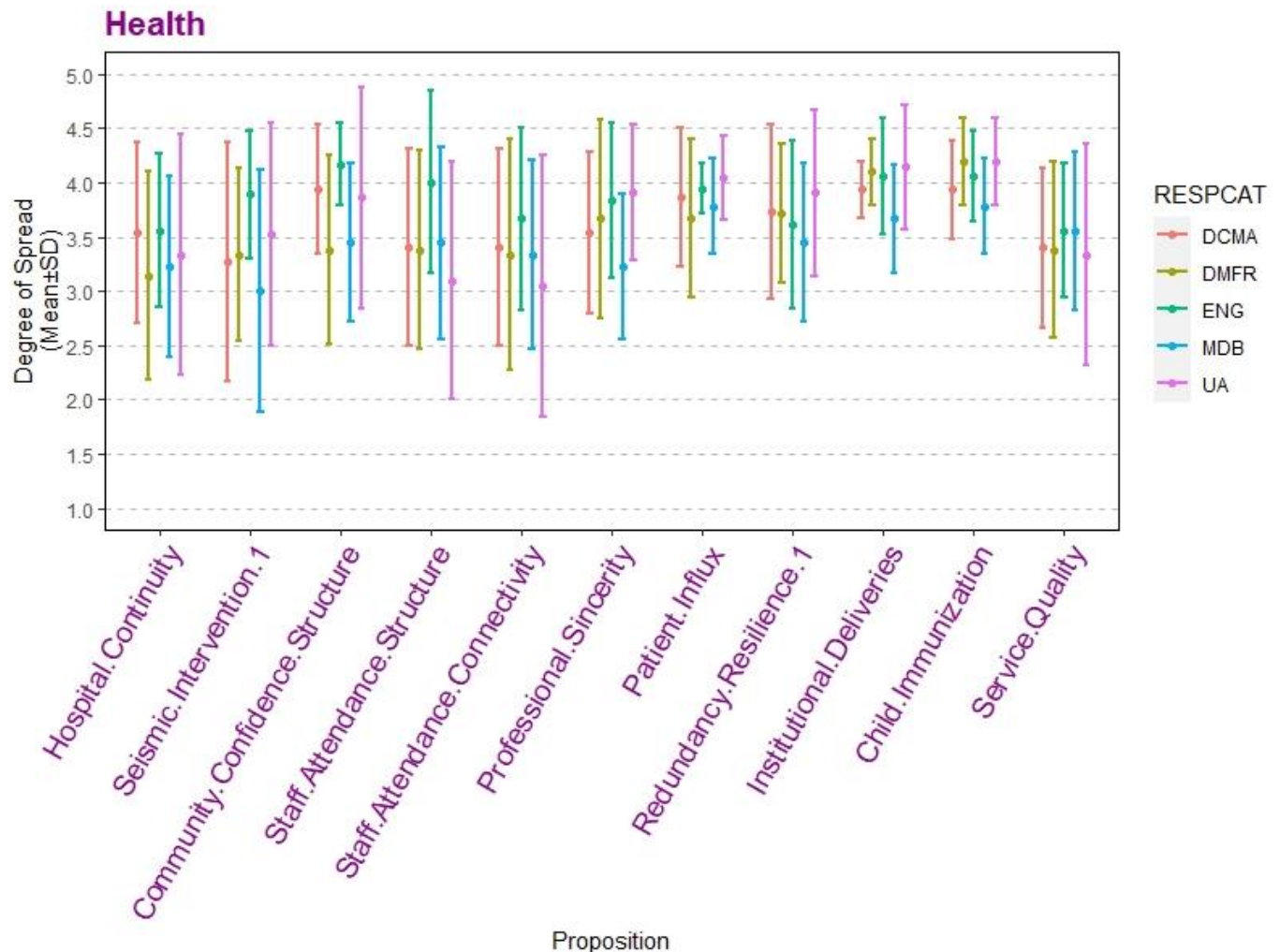


Figure 14. Error bar plot for Health theme (propositions 13 to 23) drawn through ggplot in Rstudio

With the case of ENG's outlook already explained, the steadfast assenting outlook of UA owes to marked improvements in the operating infrastructure, equipment and structural security that they experience post RRI. As the first-hand users, they must have developed positive perceptions of such developments that eased the burden of accountability and improved service delivery.

Remarkably, there was definite agreement among all the respondent-categories for 'Patient Influx; Institutional Deliveries; Child Immunization'. The mean values lie well above 3.5 having least degree of spread. Therefore, these can be regarded as the representative queries. Similar to Education, the category from which 'Hospital

Continuity; Professional sincerity' met with indeterminate responses is the MDB itself, for the reasons explained earlier.

4.2.3 Per Capita Income

The response-distribution, in general, is divided among less strong agreement, weak agreement and mild disagreement, with quite a few being indeterminate or polarized (shown in Fig 15). The mean values (total 14 propositions) exhibit large variation between 2 and 4.5. Majority of respondent-categories were fairly sceptical about certain propositions and registered mild disagreement, with the remaining ones representing either indeterminate or polarized ones as shown in the Table 3.

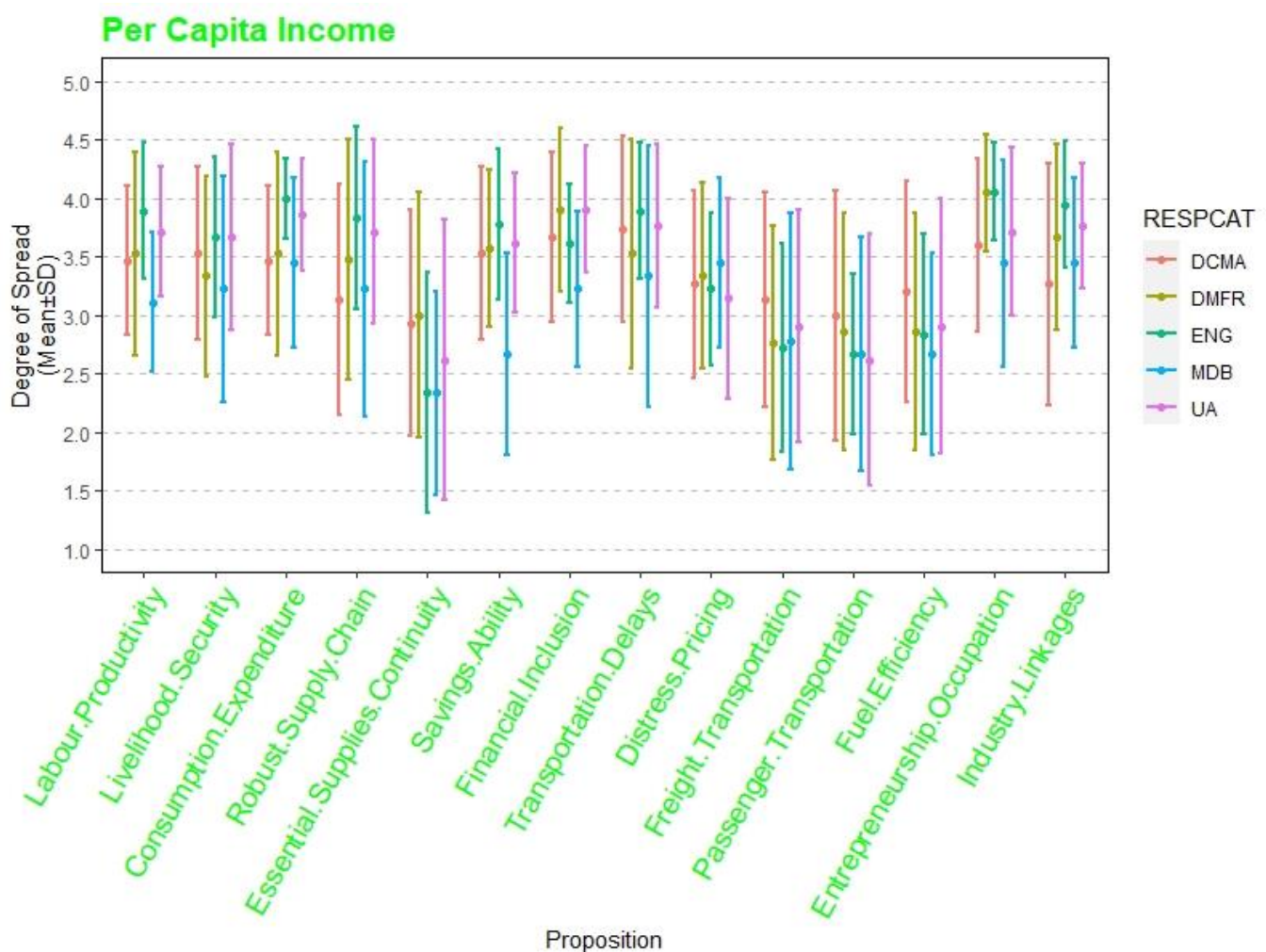


Figure 15. Error bar plot for Per Capita Income (propositions 24 to 37) theme drawn through ggplot in Rstudio

Table 3. Response nature of select propositions in PCI across the respondent categories

Proposition	Response nature	Respondent Category
Essential supplies continuity	Mild disagreement	ENG, MDB, UA
	Indeterminate	DCMA
	Polarized	DMFR
Freight transportation	Mild disagreement	DMFR, ENG, MDB
	Indeterminate	DCMA
	Polarized	UA
Passenger transportation	Mild disagreement	ENG, MDB, UA
	Indeterminate	DMFR
	Polarized	DCMA
Fuel efficiency	Mild disagreement	DMFR, MDB
	Indeterminate	ENG
	Polarized	UA

Besides above, some propositions received indeterminate or polarized response by at least one of the RCs as detailed in Table 4. Such non-committal and divided responses may owe to (i) blinkered outlook and academic ignorance of respondents to comprehend cause-effect relationship between the phenomena in question and Income; (ii) differences in perceiving correlations of income with such indicators exist because factually, they are not the only determinants of PCI. It is a function of several other factors as well, beyond the scope of this study.

Table 4. Propositions in PCI receiving non-committal and divided responses

Proposition	Response nature	Respondent Category
Labour Productivity	Indeterminate	MDB
Robust Supply Chain	Polarized	DCMA
Financial Inclusion	Indeterminate	MDB
Distress Pricing	Indeterminate	ENG, UA

Contrarily, the ‘Financial Inclusion; Entrepreneurship-Occupation; Industry linkages’ demonstrated stronger agreement since the majority lie between 3.5-4 and have their SD bars positioned above the neutral line, though some of the members of DCMA and MDB did disagree with the three. Another feature worth noticing is that the DCMA hasn’t disagreed with even a single proposition. This is attributed to their ability, academic and practical, to comprehend the economic implications of capital investments, and correlate these with employment-income-savings cycle and forward-backward linkages in economy.

4.2.4 Social Capital and Well Being

Subtle indicators as these are, hence can be appreciated by only those respondents who are either part of the community itself or work very closely with them such as the public officials. On the whole, the Fig. 16 suggested a positivist trend towards agreement with no indeterminate response and only a scarcely few as polarised ones. The response pattern rules quite highly in favour of the CI investments that are considered to boost the indicators for this development domain.

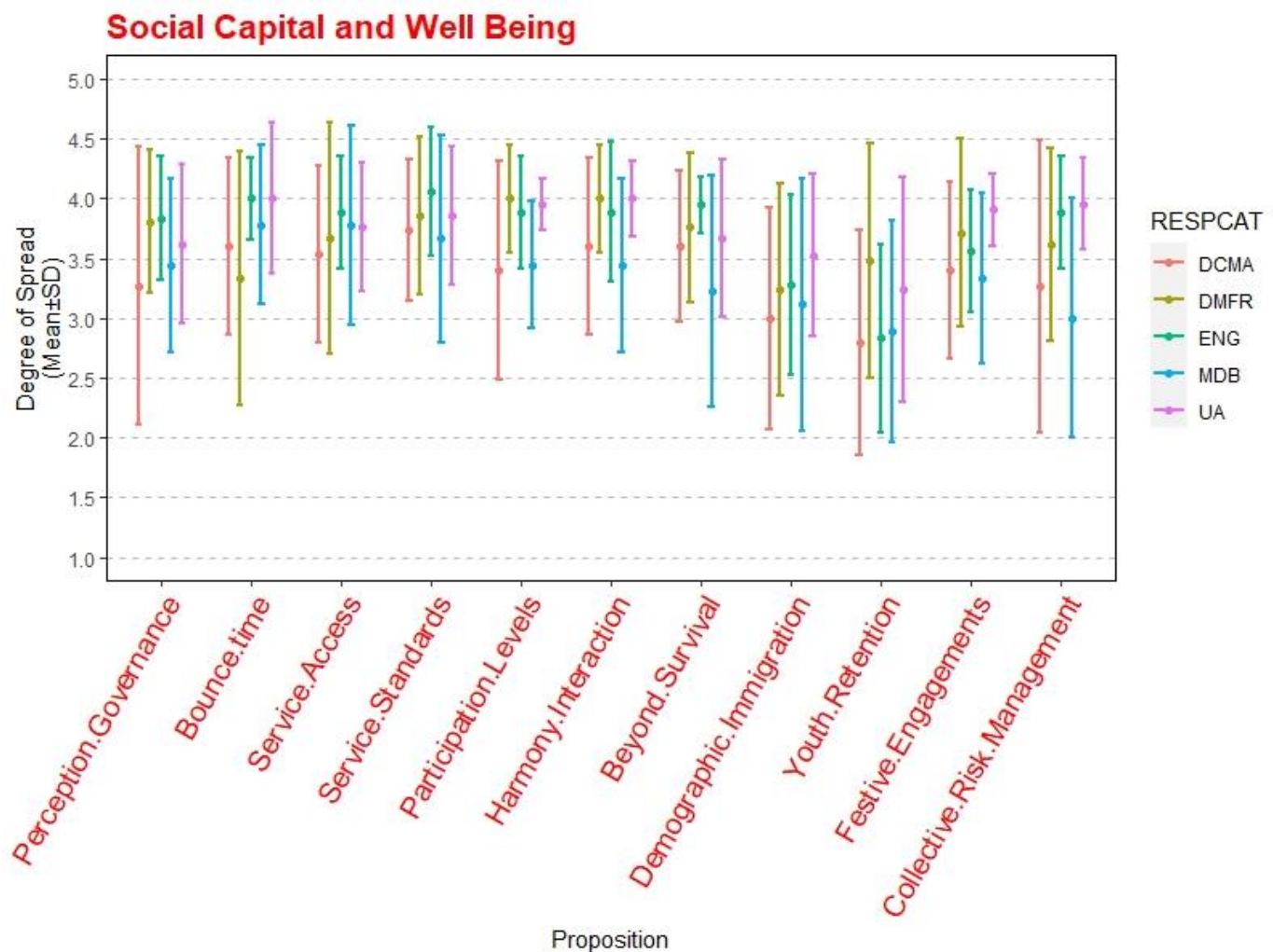


Figure 16. Error bar plot for SCWB theme (propositions 38 to 48) drawn through ggplot in RStudio

The mean values (12 propositions) across the RCs stay mainly between 3 and 4 with low to moderate SDs. Remarkably hence, all responses range from some agreement to definite agreement except 'Youth Retention' which majority of the respondent-categories (DCMA, ENG and MDB) mildly disagree with. In particular, 'Service-Standards' recorded definite agreement, with all respondents endorsing the fact that quality of service has improved post interventions.

4.2.5 Sendai Framework (SFDRR)

Altogether, the aggregate responses (defined by 15 propositions) range from some agreement to definite agreement, with not a single one being polarized or indeterminate. So, this domain outstands the preceding four in terms of the undivided, unanimous and explicitly definite response configuration (Fig 17).

Startingly, not a single proposition exists which any of the RCs disagrees with, except the singular 'Infrastructure-Downtime' which the MDB slightly disapproves of. Therefore, the overall pattern suggested quite an affirmative and assenting predisposition towards concurrence. In particular, the fact that at least the two RCs - Engineers (ENG) and User Agency (UA) have exhibited definite agreement consistently across the propositions, further adds to its significance.

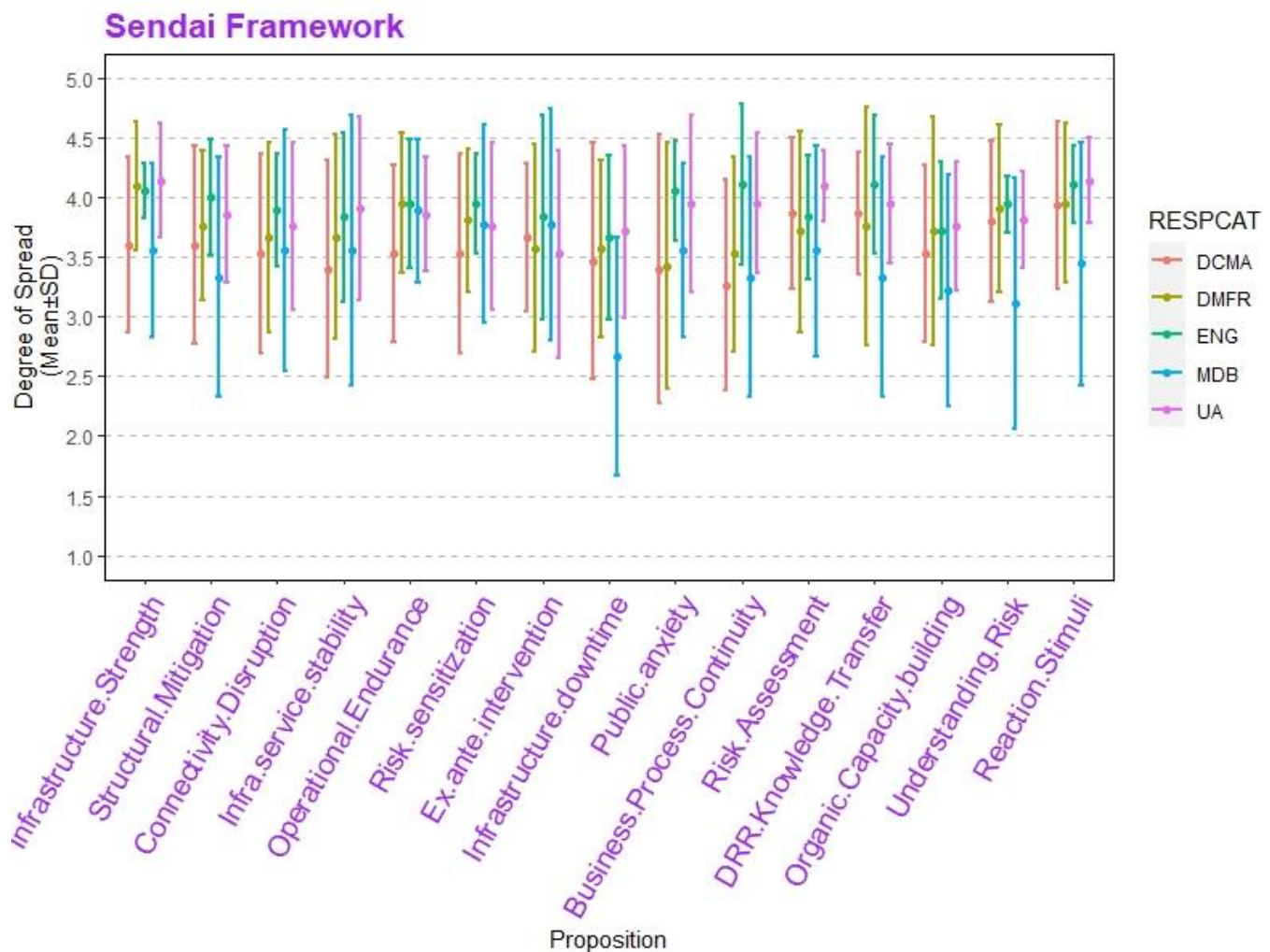


Figure 17. Error bar plot for SFDRR theme (propositions 49 to 63) drawn through ggplot in RStudio

The critics might attribute the uniform favourable response to the prejudice nurtured by the ENG towards the interventions for the reasons recorded earlier. But this argument is countered, evenly and resoundingly, by the similar favourable reaction endorsed by the UA. The UA are essentially the client agencies who operate and handle the structures and facilities meant for civic service delivery. The other RCs too follow the suit, although with a relatively less strong agreement (or weak agreements).

4.3 Open ended expression of Respondents' Perceptions

The qualitative open-ended questions, intended to muster the opinions and outlooks of 12 select high ranking Decision Makers; World Bank officials; Disaster Managers and Engineers, of varied ages and work domain experience (**Appendix III**). They have been the lead guide and forerunners for the said Risk reduction investments (RRIs), who nurtured the plan and design, besides monitoring and supervising the execution. The **Appendix-XIII** contains the section-wise key expressions and phrases that were put forth recurrently by the respondents. The descriptive responses built up further on the pre-coded questions and afforded insights into the objective perception and assessment of advances made in the public goods delivery and risk awareness by the capital interventions.

4.3.1 Question I (Causal analysis, Shock impacts, State's response)

The reflections when read together indicated quite a perceptible consensus in the averments which revealed that the hydrometeorological extreme was another major manifestation of the changing climate that exhibited anomalous atmospheric behaviour. The humanitarian impact got exacerbated by the exceedingly high congregation at Chardham, particularly Mandakini valley.

Rather than the hazard itself, it is the vulnerability of assets and people and the quantum of exposure that foster the brunt to spread through social and economic systems. The growing dependence upon CI is of grave concern. In fact, the development footprints have consistently been violating the control rules consistently. The incident response was though quite large in magnitude and scale but yet unplanned, uncoordinated, suboptimal and misinformed. The stunted technical capacity in terms of SAR and DSS on the part of the State, and generalised risk oblivion on the part of Community accentuated the vulnerability.

The CI failure such as ravaged lifeline buildings, buckled roads-bridges and snapped telecommunication lines led to missing links at several functional nodes that amplified the impacts of the fiasco. This not only subverted incident response operations but brutally reduced the coping capacity of the community. Bereft of even a single redundancy and continuity plan, it dealt a severe blow to the lifeline conveyance and essential civic services delivery.

The respondents were found united in recommending that the development paradigm needs to be in conformity with the Hazard profile of the State. There exists a compelling need to prioritize augmenting the structural, environmental and socio-economic resilience of the built environment and the masses.

4.3.2 Question II (Future challenges, DRR and Development, Science-Policy fusion)

This section elicited mixed reactions from the practitioners who expressed standpoints redolent of triumphant elation, guarded optimism, and concerns regarding continuity in the same voice. The rising hazard occurrence rate, growing vulnerability and exposure imply expanding risks. Thus, warding off complacency, being considerate of known-unknowns and bracing up to live with disaster-climate risks are strongly advised.

The collective interpretation indicated quite a consensus in identifying a major challenge in terms of effectively feeding the learnings back into thinking, action and behaviour. Though the DRA, DRDB or DSS are developed but the test lies in systemic use for early understanding of risks. Overcoming the unconcern against DRR, resilience, CI; and enabling risk mitigation as scalable are daunting tasks ahead so as to withstand recurrent tail events.

Further, the impact forecasting, advanced EWS remain to be strengthened. Spurring the risk perception and reinforcing the training of the Community down to the village level, as first responders, is another trial to be confronted. Undoubtedly, the setting up of USDMA is a progressive step towards institutionalising Disaster Risk Governance, however, it is not yet a policy priority and figures low on the State agenda. The frequent and extreme disaster-climate risks impede the capital investment and growth of the region. So, viable risk-transfer instruments and having the development delinked from such disruptive shocks is the way forward to sustainability.

4.3.3 Question III (Lessons learned, Feedback loops, CI resilience, DRR as a governance priority)

The officials pinned high hopes on RRI undertaken on instituting resilient CI, advanced EWS, newly acquired capability to assess and manage risks through DRA,

DRDB and DSS. These have, to some extent, comforted the gloomy risk landscape, reduced disaster-mortality, livelihood loss and asset damage. The community is being relatively more risk-sensitive and getting to adapt-cope better. The roads, bridges, schools, hospitals increasingly use hazard-resilient building design codes; the civic services now employ business continuity plans; the meteorological warnings are disseminated in real time; the EOCs gather-process data, disseminate alerts, coordinate-response and oversee action confidently and discreetly.

Majority of the responses though uniformly exude optimism and confidence about the steps taken but, at the same time, are wary about the interventions' fate that risk being fleeting. They averred that the progress can sustain through space and time only if persisted with by political-executive, policy-practitioners and community alike. These are to be extended steadily to expand coverage of assets and population. The innovative research, science and technological solutions will have to be aptly fused into decision-making and overall governance.

So, the upgradation is indeed promising, augur well for State's risk landscape, and conform to the principles of Sendai Framework. Nonetheless, they emphasised that fostering DRR into mainstream development planning won't constitute a political compulsion unless the community (i) itself gets immersed into the DRR verities and knowledge building; (ii) becomes risk-aware, risk-literate, participate in local evacuation- & DM-plans; (iii) begins inventorying local resources; and (iv) acquire requisite skill and aids for first response. Essentially, it is the whole-of-society approach that can break free of Risk Inertia.

In summary, the endeavour constituted a modest initiative to stimulate and bring forth informed opinion, judgement, observation and standpoint on the lessons learned, applied feedback loops of thinking, behaviour, planning and decision-making process. It tried to ascertain as to whether (i) the knowledge and experience gained, post the incident, have been put into action; and (ii) these could inspire any material change or merely acted as a means for recognition of the past. While the reactions do get influenced by the ages, backgrounds, occupations and experience (Delgado 2022), this diverse range of practitioners' ponderings represents a valuable contribution to the research.

5 Discussion

The results substantiate that the CI cuts across different aspects and sectors of development. It is rightly espoused as a vital driving force and an integrating element across the global efforts to achieve Sustainable Future by 2030. Consequently, the resilient infrastructure systems do conjoin development and DRR through their ability to effect resource nexus, boost equity, stability and inclusive development.

Throughout the world, across space and time, the translation of innovation, ideas and research products has very much been a function of priorities, perspectives, knowledge, thinking and behavioural patterns nurtured and exercised by the practitioners and decision-makers. More often than not, they are inevitably at the cutting edge of planning and executing incident response, recovery-relief-rehabilitation and preparedness, within the Disaster cycle. Hence exploring and dissecting the outlooks and perceptions of such officials assume overwhelming implications. The findings may serve as a model guide to introspect and reflect upon their actions (or inactions) undertaken in the past as well as a rightening couple to *steer the policy priorities, investment plans and action as regards the Disaster-Climate risks and pre-emptive ex-ante Governance*. (Aldunce et al., 2015).

Nevertheless, the opinions, beliefs and experiences of the respondents may differ from the existential reality and absolute values on multiple accounts. *First*, these officials happen to be the planners, executors and compliance controllers of the said investments themselves. So, they run the risk of providing responses redolent of complacency and self-righteousness. *Second*, their responses are suggestive of what they think that needs to be done, which though constitute reality of perception in their own right but actual part of the matter (actuality) might be something else (Palliyaguru, Amaratunga and Baldry, 2014).

Hence these need to be distinguished and analysed critically in the light of scientific evidence, statistics and information datasets to defend against the inherent biases and prejudices. The analysis warrant severance and insularity from their exalted positions, work experience and high relevance as respondents. The discernment assumes eminence in the context of significance the results hold, for referral by the investors, policy practitioners and academia, in risk informed decision-making and appraising capital investment in CI.

5.1 Key findings

In general, there emerged an affirmative and confirmatory trend endorsing and espousing the positive impact of CI on advancing development goals and risk reduction priorities under study, as envisaged by the Global Agenda 2030. Since the development themes (first four) and DRR priorities (fifth theme) are judged to show emphatic improvement concurrently, the role of CI as an integrator between development and risk reduction too gets validated.

The Likert diagrams exhibit unanimous assent to the propositions. Irrefutably, they endorsed the accrual of paybacks from RRI fostered in connectivity infrastructure, key public buildings and revitalising risk-consciousness of the community. Notwithstanding, it is prudent to deliberate over factors that led to disagreement or agreements with marginal majority in certain propositions as shown in Table 5. The said invalidations indicate that some influencers, that exist outside the scope of present study do exist, need improvement. These might be socio-cultural, moral-ethical or simply want for allocating more investment in the CI around.

Table 5. Theme wise concerns that emerged through Likert Diagrams, warranting further causation analysis

Development theme	Proposition	Overall Grading	Concerns (Relative to propositions within the theme)
Education	Safety Concerns	Agreement	Indeterminacy highest; Agreement lowest
Health	Service Quality	Agreement	Indeterminacy highest; Agreement lowest
PCI	Essential Supplies Continuity	Disagreement	Loner and disagreed in highest proportion
SCWB	Youth retention	Agreement	Indeterminacy highest, Disagreement highest
SFDRR	Not any	Not any	None

More specifically, the responses and reflections indeed establish the potential of CI in advancing the UNSDGs # Goal 1, Goal 3, Goal 4, Goal 10 and, Social Capital and wellbeing, while making progress towards meeting SFDRR' Target # 4 and Priorities # 3 and 4; for reducing disaster damage, disruption to CI and increasing their resilience respectively.

The generation of largely uniform score pattern (in aggregate) across the development themes indicates as much coherence among the statements as the complementarity among themes themselves. The respondents' scores for the first four themes are commensurate to those in fifth (SFDRR theme). So, reducing risk through RRI is essential not only for attaining the goals of Sendai Framework but the SDGs as well.

Further, unlike the DCMA and DMFR, very few of ENG, UA or MDB had any direct experience in dealing with disasters. While all of the ENG, DMFR and UA were technically deft and qualified in their professions, they don't hold skills or aptitude as informed and expansive as borne by DCMA and MDB, that are essential for inclusive policy planning, lateral coordination and multidisciplinary thinking. Hence professional backgrounds, academic qualifications, and social outlooks differed substantially among the groups, yet not in a simplistic manner. Despite that, it is surprising that uniformities did emerge all across the themes and RCs.

There exists fair homogeneity across the RCs as well. The whole cohort validated, mildly or strongly, majority of the propositions and were non-committal (indeterminate) in scarcely few at 4.5% (14 out of 315 responses). The proportion of the polarised responses at 3.5% (11/315) was not significant either. Strikingly enough, only 7% (22/315) of them were disaffirmed, that too on a weak note, when analysed RC-wise through Error bar plots. Not a single proposition could evoke definite or strong disagreement.

Nevertheless, dissent and few variations in beliefs and value judgements did show up; howsoever meagre or insignificant these were. The scepticism, indecision (indeterminacy) and ambivalent (polarized) attitudes signify a grave challenge in distinctively comprehending the worth of CI, advancing ex-ante interventions, and resolving its role as a development-DRR connector. The decision-making certainly gets better if the responses are marked and striking.

The respondents were found united in recommending that the development paradigm needs to conform to State's hazard reality. There exists a compelling need to mainstream DRR into policy thinking and action. The structural and socio-economic resilience of the built environment and masses can't be relegated any longer, to a lower order. It was stressed that the persistent challenge to effectively build on the learnings and feed them back into the planning-investment cycle, needs to be negotiated vigorously. The systemic use of information for early risk-assessment; overcoming the political unconcern; instituting multi-hazard resistant assets and viable risk-transfer instruments are the way forward to delink economy from disruptive shocks and stresses.

The standpoints voiced, in parallel, continuity concerns for prevalent DRR pursuits and guarded optimism for the evolving risk governance. The rising hazard occurrence rate, growing vulnerability and exposure imply expanding risks, that warrant warding off complacency and to be considerate of known-unknowns. The scientific data and technological solutions need to fuse adequately into overall risk-governance.

Significantly enough, establishing resilient CI was identified as an inseparable element of development-sustainability-governance continuum. Inclusive of ex-ante interventions, DRR was adjudged as a 'Work in Progress' that needs perpetual supervision, planning and upgrade. It was emphasised as an all-pervasive process and rarely an isolated or distinct set of actions. The discourse reminded us of the downright intricacy of CI and that rudimentary analysis of DRR from a primitive perspective needs to be replaced with cross-sectoral and multi-disciplinary education, research, practice and policy making aspects.

5.2 Strengths

The study is fortified with some potent assets and exclusive strengths that serve to explain the context and background; mitigate the limitations it suffers from; and boosts relevance, utility for further research, learning and practice in the public sphere.

First of all, it was unprecedented for the Policy practitioners and Disaster-Risk administrators from the State as well the Multilateral Banks to come across an exercise (the survey test) in which the propositions incisively explored and evaluated the role

and significance of CI in sustaining and bolstering the socio-economic development goals, societal milieu and risk consciousness of the community. It was as much academic and scholarly as relevant for planning and action in the field.

Second, the study afforded a modest canvass to express themselves candidly, script practical recommendations, shared their learnings, and confessed their handicaps and dilemma. They expounded on the actions and achievements for which they were not credited with and inactions they regretted about. It enabled the study to explore as to how the lessons and introspections were fed into the systemic thinking and behaviour; and about the other players and stakeholders who share responsibility for managing risks (Hanna, White and Glavovic, 2020).

Third, to my knowledge, this was an unassuming fresh attempt at studying impact evaluation of the CI landscape on SDGs and DRR priorities. Furthermore, this project was privileged to have high ranking, elite, senior administrators, decision-makers, technocrats, disaster-managers and seasoned DRM consultants serving the Government and Multilateral Institutions; who are at the cutting edge of planning and practising Disaster Risk Governance. The initiative also suggests that the previous research might not have the capacity to access, motivate or sensitise such a diverse, multidisciplinary and qualified group of practitioner cohort.

Fourth, the accompaniment of the questionnaire by the open-ended queries mitigates the report bias (if any) that might have crept into the responses to the closed ended questions. The concerned open-ended questions were designed as neutral and comprehensive that endeavoured to cover entire scope of the study (Wetzel, Böhnke and Brown, 2016).

Fifth, such an attempt at evaluating impact and ascertaining cross linkages among CI, Development Goals and DRR never been taken neither by the State nor the MDBs ever since the external assistance started pouring in from them. This piloting will go a long way in improving outcome evaluation during closure of the ongoing projects and assessing the cost-benefit ratios or the Impact Factor of prospective investments; by the MDBs or Commercial Banks; not only in the State but the neighbouring provinces and Himalayan nations as well, that share similar physiography, risk profile, hazard dynamics, socio-economic setting and disaster-risk understanding by the commons (Shreve and Kelman, 2014).

5.3 Limitations

Nevertheless, the study does suffer from certain limitations, intrinsic and extrinsic, owing to imperfect methodology; resource and time constraints; restrictive state of play during Covid-19 pandemic; extensive research objectives; or insufficient prior research that may influence outcomes and conclusions. A candid presentation of these aids to explore alternative approaches, place findings within proper context, and supports future investigation.

First, the questionnaire comprised some definite statements that strived to ascertain the worth of resilient CI in the general risk landscape and as a vital link between select UNSDGs and SFDRR. Hence there may exist numerous other benefits and transmission effects of RRI that were not considered. Further, it should have been a random mix of true and false statements for fairness and ruling out bias. But simultaneously it was believed, that this would have spawned perplexity and moderated its field effectiveness, as one objective was to emphasize the CI and prospects of pre-emptive interventions in planning and action. Thus, it did encourage uniformity, at the cost of a certain amount of neutrality.

Second, as all the statements in combination reveal the specific dimensions of the attitude towards the particular domain, and are inter-linked. This, however, ensure valid representations of the concepts to be tapped and to maintain internal reliability, integrity and consistency.

Third, in an ordinal scale like Likert, responses though can be ranked, but the distance between responses is not computable. Thus, the distance between them is not equidistant even though the numbering assigned to these responses are. Therefore, as against mean, the median is a preferred measure of central tendency for this scale (Becker *et al.*, 2012).

Fourth, adoption of Convenient Sampling might have rendered the sample less representative of the practitioner population and inflicted with selection bias. The special and atypical class of informants engender limitations on their availability and readiness, that didn't grant one the luxury to resort to random Probability Sampling. Nonetheless, the questionnaire was floated in the respective whole populations of the respondents, that got honoured as per the individual's wish, priority and desire to contribute to a scholastic study in public interest. In all fairness hence, it was not strictly

Convenient Sampling but envisaged to be as representative and diverse as possible, so that the findings extend beyond the subjects and the region under study (Lines *et al.*, 2022).

Fifth, the research findings risk being not applicable to other areas or population groups to the same extent and intensity as the one under consideration. The inferences are often aspired to extend to a large and wide extent beyond the study region. This tendency to seek *external validity and pervasive applicability* has to be guarded, since it doesn't bode well for the sciences or the society (Bryman, 2012).

5.4 Implications for practice and recommendations

Critical Infrastructure and Resilience

The report kindles businesses and governments to be Risk-aware; and rather than 'business as usual', choose a 'resilience approach' that relies on Risk-transfer, redundancies, and continuity management. It advises asset-owners and investors to not allow interim profits to overshadow apprehensions about long term sustainability (Abe *et al.*, 2019).

Cost-benefit ratios of long-term DRR

The results emphasise embracing 'ex-ante investment' as the policy norm, to not only reduce risk-induced losses, but realize the 'resilience dividend'. It is essential for long-term profits, wealth formation and sustainable future. Besides tapping economic potential and development co-benefits, it can substitute disaster-poverty and inequity for adaptive recovery. As the knowledge holds, an annual global pre-emptive investment of \$6 billion in pertinent DRR strategies would engender overall benefits of \$360 billion annually (UNDRR, 2015).

So, radical transformation is needed in financing priorities and systems. These must be overturned to invest more at the prevention end of the cycle. This will take plenteous research, multilateral brainstorming and novel financing ideas to carve dedicated long term funding solutions and policy expertise to plan and appraise such projects.

Development and Disaster Risk

The statistical analysis visibly demonstrates the impact of RRI into building resilience. So, the report implores the investors to explore the preceding investments into

resilience. It is fundamental to contribute to the execution of the Sendai Framework and supports business resilience, growth and buoyancy.

Both the closed- and open-ended responses advocate a decisive swing from dealing with disasters to managing risk, and hence a way to address financial losses that threaten life, livelihoods and, in turn, society's socio-economic, and political systems. The findings advised the State to establish coherence between DRR and development practices; and inform future planning and implementation support for the endeavours that embed disaster-climate risk into strategies, investment decisions, education and social engagement.

Taking a disaster risk-informed approach is both a chance to augment interactions between the 2030 Agenda and the Sendai Framework and to minimise the reporting burden for the Nation States in light of voluntary national reporting to the Midterm Review of the Sendai Framework 2023 (UNDRR, 2020b).

Practitioner' Dilemma

Specifically, it is the Disaster-Risk Practitioners who are at the cutting edge of planning, incident response, recovery-relief and preparedness, within the Disaster cycle. However, their capacities to act and deliver are constrained by:

(i) Slanted outlook: Preoccupation parochial and chauvinist development narratives, fragmented and severed from the contemporary disaster-risk reality, (ii) Science-Policy divergence: Risk-informed development is elusive and, (iii) Risk inertia: Complacent circadian regime, scholastic ignorance on the part of Community, in both space and time (Weichselgartner and Kasperson, 2010; Haney, 2021).

And so, the findings entreat for supporting Practitioner's efforts to sustain and expand the scale and extent of pursuits towards governing risks; and coverage of assets, population and economy. The open-ended reflections rightly advocate to be unrelenting in our demand that resilience and DRR are at the core of governance, development and sustainability.

Policy Paradox

The report highlights disinterest and stunted risk perception on the part of political executive. So, it is obligatory to oversee that political commitment to expressive action

towards building Disaster-Climate resilient societies transcend election terms. The political sincerity shouldn't be limited to gaining electoral mileage or fleeting media glare. The risk-informed development must constitute an electoral compulsion for priority sequencing (Basher, 2008; Mizutori, 2019).

To conclude, the findings exhort the society to be dexterous to understand and assess Disaster-Risks particularly the climatic extremes and tail events. Reinforced synergies among the political executive, practitioners, development partners, academia and civil society are particularly crucial for structured institutional policy framework that highlights DRR in development design, decision and action.

It won't constitute a political compulsion unless the community (i) itself gets immersed into the DRR verities, its dissemination and knowledge building; (ii) becomes risk-aware, risk-literate, participate in local evacuation- & DM-plans; (iii) begins inventorying local resources; and (iv) acquire requisite skill, training and aids for first response. Breaking free of risk inertia and parochial development narrative are the immediate needs.

6 Future Pathways

In modern-day disasters, context and milieu are all-important. Incidents, developments, policies and trends that are apparently considered as unrelated with the disaster may be actually central to its outcome. The current research is a pilot initiative to evaluate the impact that RRI's spawn on the development goals as well as the select Priorities of the Sendai Framework. And so, it has got tremendous scope for building on, wherefrom innumerable pathways emerge that may contribute to the societal good in future. The present work couldn't account for the same as it was merely an introductory step in this direction.

First, the results although expressly recommend ex-ante DRR governance but this needs to be substantiated through data driven controlled experiment in multiple study areas, having the same base-level risk-landscape, risk-perception, socio-economic construct, cultural milieu as the variable factors; except that the pre-emptive RRI's will have been made in the experimental group only as against the controlled groups, before an eligible disaster. Additionally, the effects on UNSDGs-SFDRR and their complementarity will be better informed by this experiment (Mann, 2003).

The existing literature holds ex-ante investment as cost-effective and robust choice. A gigantic \$4 in gains is affirmed for a dollar invested into building resilience (Hallegatte, Rentschler and Rozenberg, 2019). However, the bases employed for deducing quantitative benefits have not been empirical and the margin for expansion is enormous and profuse specialised research is inevitably called for.

Second, there exists a cosmic opportunity to enlarge the scope of development goals and risk reduction aspects, beyond those in the current study. Given the CI vitality to effect resource nexus, equity, stability; and growing significance of SDGs in policy thinking and action, it is obligatory to advance the frontiers of CI-SDGs-SFDRR yoke.

Beyond the said RRI's, equally significant it is to consider other determinants influencing the said development indicators such as progressive State policy, public awareness or economic growth drivers. This assumes substance in order to defend against the possibility of crediting the positive impacts of such determinants to the RRI's in CI and vitiating the results and findings thereof.

Third, the tectonic policy-shift towards conjuring up ex-ante interventions; institutionalizing risk assessment capacity; and sustaining risk-informed governance; shall necessarily require firm political resolve. This entails conducting in depth investigation into the reasons for intractable policy-paradox and stunted risk understanding among the community. Of particular academic interest is the slanted outlook, parochial and chauvinist development narratives severed from the contemporary Disaster-Climate risk reality.

Fourth, a key concern of such quantitative research using cross-sectional design is to seek sufficient external validity and pervasive applicability for its findings. The inferences are aspired to be extended to a large and wide extent beyond the study region. So, it merits performing a scrupulous and rigorous accounting for the localized region-specific determinants. These are essentially the (i) base-level risk profile; (ii) risk perception, socio-economic construct, and cultural milieu; (iii) technical capacity to respond and assess risks; (iv) policy imperatives and priority for DRR. These realms, accordingly, justify future academic labours and research pursuits.

7 Conclusion

This experimental study is an exercise to gauge the extent of constructive impact the resilient CI cast on development goals and risk reduction, by aggregating insightful beliefs and opinions of senior risk practitioners serving the Government and multilateral institutions. Rather than comparative, it is integrative of the perception patterns owned by the informants. The vulnerability of CI orientates the advancement of events in relation to society's reaction loops. Thus, ex-ante interventions in the preparation stage itself reinforces escalation points and social nodes that amplify resilience dividend and sustainability.

The RRI in CI are judged to foster emphatic advances in the indicators representing select SDGs and SFDRR priorities, besides endorsing the complementarity between the two. However, it reveals resilience-building and risk-reduction as an inseparable part of development-sustainability-governance continuum, hence as 'work in progress'. The reflections act as a rightening couple to steer infrastructure governance as a mainstream policy priority.

As the planet becomes more intricate and interrelated, an incremental variation is leading to the volatility of feedback loops, threshold effects and compounding interruptions. Abrupt and intense collapses, and prospective shocks become more probable. The low probability tail risks have crushed the psychological stereotypes, technical blinkers, dogmatic assumptions and smug outlook, nurtured against such scenarios until now. So, sustaining the pursuits, considering known-unknowns and bracing up to live with disaster-climate risks are strongly advised.

Given its significance as a referral in informing capital risk reduction investments and multi-disciplinary practice, the modest study has to be built on by more complex alternatives to enhance results' resolution and external validity, so as to contribute to policy inputs governing infrastructure resilience, development and risk reduction yoke. It holds the ability to replace precarity and subsistent living with buoyancy and prosperity, essentially for the deprived communities and imperilled societies.

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9 Appendices

Appendix I: Questionnaire comprising 63 pre-coded questions

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Appendix III: Reflections to open-ended questions by 12 select senior Decision makers and Administrators

Appendix IV: Sector wise allocation and expenditure details of SPA-R

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Appendix XVI: Theme wise questions and short forms for referral

Appendix I

Google Docs link to this Questionnaire, Participant-Consent Form and Participant-Information Sheet: <https://docs.google.com/forms/d/1VXps1MAHfNxKUXtFQ5m-XITipdPFkYim76tC4bu3Zzg/edit>

Savin Bansal

Project ID-22801/001

Questionnaire (pre-coded on 5-point ordinal Likert scale)

Note: It consists of 5 sections containing 63 questions representative of the four 'Target Indicators' under UNSDGs (Education, Health, Income, Social Capital-Well Being) and the Targets 'C', 'D' and 'First and Third Priorities' of SFDRR respectively.

A. Education

1. The instances where the school services got discontinued have been minimal or none.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

2. The non-structural seismic interventions as well as BALA (Building as Learning Aid) have extensively been fused into reconstructed schools.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

3. The children don't feel unsafe anymore to visit school owing to fear of structural damage during hazards.

- A) Strongly Disagree
- B) Disagree

- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

4. The parents don't withhold the children anymore from attending school during monsoonal period.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

5. The instances where school-staff become unable to show up because of fear of structural damage have been minimal or none.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

6. The instances where school-staff become unable to show up because of disrupted connectivity, have been minimal or none.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

7. The availability and willingness on part of teachers to stay and serve sincerely have increased (quality of service).

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

8. The education enrolment ratio has maximized post such risk-reduction investments in school and roads-bridges.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

9. The retention rate in schools has increased post such risk-reduction investments in school and roads-bridges.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

10. The education and Road-Bridge Engineering Departments' ability to maintain redundancy (in terms of equipment and Human-Resource) and resort to Resilience Manual during hazards has actually increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

11. The girls' attendance at schools has increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

12. In Parent Teacher Meeting, the locals raise minimal or no concerns about structural integrity of schools or children's safety in monsoons.

- A) Strongly Disagree
- B) Disagree

- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

B. Health

13. The instances where the hospital services got discontinued have been minimal or none.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

14. The non-structural seismic interventions have extensively been fused into reconstructed hospitals.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

15. The community don't feel unsafe anymore to visit hospital owing to fear of structural damage during hazards.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

16. The instances where healthcare staff become unable to show up because of fear of structural damage have been minimal or none.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

17. The instances where healthcare staff become unable to show up because of disrupted connectivity have been minimal or none.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

18. The availability and willingness on part doctors and healthcare staff to stay and serve sincerely have increased (quality of service).

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

19. The patient influx in the reconstructed hospital has increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

20. The Health and Road-Bridge Engineering Departments' ability to maintain redundancy (in terms of equipment and Human-Resource) and resort to Resilience Manual during hazards has actually increased.

- A) Strongly Disagree

- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

21. The institutional (in hospitals) deliveries have increased thus reducing the Infant Mortality Rate.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

22. The immunization rates of children and mothers have increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

23. During community overreach camps, minimal or no queries/complaints are received about structural integrity of Hospitals and services continuity during hazards.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

c) Per-capita income

24. The labor productivity has increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree

E) Strongly Agree

25. The livelihoods have become more robust and secure.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

26. The per-capita income and consumption expenditure have increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

27. The Supply-Chain networks don't get disrupted now on account of creeping of structural deformities in the reconstructed roads-bridges during hazards.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

28. There has not been any price-increase or supply shortages in essential items (Grocery, Fruits, Vegetables and Household items) in the aftermath of any disaster all this while.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

29. The households' ability to save surplus has increased.

- A) Strongly Disagree
- B) Disagree

- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

30. As a proxy to increased financial inclusion and growing income level (savings), the number of Banking Financial institution branches have increased. (Income)

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

31. There has been sheer decline in instances of transportation delays and blocked routes that have incentivized farming, horticulture and animal husbandry in the concerned areas. (Income)

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

32. The incidents of horticulture produce (perishable) confronting distress pricing in the market downhill (plain areas) have decreased. (Income)

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

33. The transportation cost of freight produce (food-grains, pulses, horticulture produce) has decreased. (Income)

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

34. The transportation rent charged by commercial passenger-vehicles has decreased too. (Proxy to transaction cost and income savings)

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

35. The fuel expenditure incurred on private vehicles (bikes, cars) has gone down (Proxy to transaction cost and income savings).

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

36. The number of merchandise shops, taxi-operators, retail outlets among others have notably increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

37. The forward and backward linkage industries related to primary sector have increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

d) Social Capital and well-being

38. The community's disposition/perception towards teachers, medical-staff and Road & Bridge engineers have improved.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

39. Post the positioning of flood and seismic hazard resilient roads, bridges and conveyance infrastructure, the time taken and cost incurred by the community (adaptation and coping capacity) to return to normalcy has decreased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

40. The Multi-Hazard Resilient Infrastructure (MHRI) has infused highly positive transmission effect on accessing (reduced transaction cost) social and civic services such as school, health, civic supplies, Banking outreach, Post office.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

41. The MHRI has fostered positive transmission effect on the quality (standards and timeliness) of social services (school, health, civic supplies, Banking outreach, Post office).

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

42. The social security levels and participation of locale in collective celebrations, gatherings have increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

43. The social harmony, well-being and interaction levels have increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

44. The households have moved beyond survival existence (sustenance way of life).

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

45. The demographic pattern of migration is now inclined towards immigration.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

46. The retention of youth in the concerned areas has increased. (Proxy to robust livelihoods)

- A) Strongly Disagree
- B) Disagree

- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

47. The forward and backward linkage festivities and social-engagements corresponding to the primary sector proliferation have also increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

48. The community has increasingly begun documenting-drafting local Disaster Management plans, first-response & evacuation strategies, inventorying local resources (trained volunteers-material-equipment) for DRR.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

e) First and Third Priorities 'Understanding Disaster Risk' in SFDRR (Sendai Framework)

49. The strength and safety (resilience to disaster-shocks) of roads, bridges, schools, hospitals, fire stations have increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither agree nor disagree
- D) Agree
- E) Strongly Disagree

50. The structural mitigation features have duly been incorporated for infrastructure reconstruction (connectivity, schools, hospitals) which now are Flood-Seismic Hazard Resilient.

- A) Strongly Disagree

- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

51. The instances of disruption in connectivity during hazards have highly decreased post the multi-hazard resilient bridges and roads construction.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

52. The bridges and roads infrastructure built after 2013 continue their operation without interruption during emergencies.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

53. The operational continuity of civic & social services has increased during emergency strikes.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

54. The increase in sensitization of school, hospitals, Road & Bridge Engineering departments about DRR preparedness, response, contingency-planning has had a favorable impact on the service continuity.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

55. Had Critical Infrastructure (roads, bridges) and individual housing been hazard-resilient and robust earlier, the losses exacted in 2013 disaster and its impact on normal regimen of the mountain-communities would have been less manifold.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

56. There has been no or rare instance when the services of reconstructed roads, bridges, schools and hospitals, got suspended owing to repair downtimes or damage.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

57. The community's apprehension about structural-collapse of schools or buckling of roads or yielding of bridges has decreased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

58. The instances where local economic and community business processes (Government offices, essential commodities shops, markets, transportation of goods and passengers, waste management) got discontinued owing to disrupted connectivity have been minimal or none.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree

- D) Agree
- E) Strongly Agree

59. The community's perception about Disaster-Risk, and appreciation of scientific knowledge, data and Risk-Assessment has increased.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

60. The Disaster Risk Reduction knowledge and capacities are increasingly being passed on to children formally through local school curriculum, State sponsored training, simulation drills or informal inter-generation transfer as part of traditions, after the 2013 deluge.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

61. The community and school-children have begun evincing more interest in learning and employing risk-maps, area-specific historic Disaster-loss database, vulnerability profiles, causal factors, hazard catalogue during training and capacity-building sessions.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

62. The community and school-children now better understand the concept of exposure as well as appreciate the significance of Hazard resilient construction practices, building-codes and safe sites.

- A) Strongly Disagree
- B) Disagree

- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

63. The locale's vigilance level, action and obedience to the early-warnings, forecasts and advisories issued by the Indian Meteorological Department, State and District Disaster Management Authorities have enhanced reasonably.

- A) Strongly Disagree
- B) Disagree
- C) Neither Agree nor Disagree
- D) Agree
- E) Strongly Agree

	A	B	C	D	E	F	G	H
1	Appendix II	Data Response to 63 precoded questions by 84 respondents						
2		Education						
3	Category	Q1	Q2	Q3	Q4	Q5	Q6	Q7
4	DCMA	4	5	4	4	4	4	4
5	DCMA	2	3	4	4	4	3	4
6	DCMA	4	2	4	4	4	2	2
7	DCMA	2	4	4	4	4	2	4
8	DCMA	1	4	4	4	4	5	3
9	DCMA	4	4	2	2	2	4	2
10	DCMA	4	3	4	4	4	4	4
11	DCMA	1	3	2	2	3	2	4
12	DCMA	4	4	4	4	4	4	4
13	DCMA	2	4	1	3	3	3	5
14	DCMA	4	4	2	4	4	4	4
15	DCMA	4	2	4	4	4	4	4
16	DCMA	4	3	4	3	3	3	2
17	DCMA	1	1	2	2	2	2	1
18	DCMA	2	3	3	4	4	4	3
19	DMFR	4	5	4	4	4	4	3
20	DMFR	4	5	5	4	4	3	4
21	DMFR	4	2	2	4	4	4	4
22	DMFR	4	3	2	4	2	4	4
23	DMFR	4	3	3	3	1	1	5
24	DMFR	1	4	4	4	4	2	4
25	DMFR	2	4	4	4	2	4	4
26	DMFR	2	3	2	2	3	4	3
27	DMFR	4	4	2	4	4	2	4
28	DMFR	4	3	4	4	4	5	4
29	DMFR	4	5	4	5	4	3	3
30	DMFR	2	2	2	4	2	4	4
31	DMFR	3	4	1	2	2	2	4
32	DMFR	4	3	4	2	2	2	3
33	DMFR	3	3	4	3	4	3	4
34	DMFR	5	4	5	5	5	4	3
35	DMFR	3	3	2	4	2	3	4
36	DMFR	4	5	4	4	4	4	4
37	DMFR	3	2	3	4	3	3	4
38	DMFR	1	4	1	2	1	1	4
39	DMFR	5	2	4	3	4	5	4
40	ENG	5	5	5	5	5	5	5
41	ENG	4	4	5	4	4	4	4
42	ENG	4	4	4	4	4	4	4
43	ENG	4	4	4	5	5	4	5
44	ENG	4	4	2	2	2	2	2
45	ENG	3	4	3	2	2	2	3
46	ENG	4	4	4	4	4	4	4
47	ENG	4	4	4	4	4	2	4
48	ENG	4	4	4	4	3	4	5
49	ENG	4	4	4	4	4	2	4

	A	B	C	D	E	F	G	H
50	ENG	5	5	4	4	4	4	5
51	ENG	4	5	5	4	4	4	4
52	ENG	1	5	4	4	4	4	4
53	ENG	4	4	4	4	4	4	4
54	ENG	4	5	5	4	5	4	5
55	ENG	4	4	4	4	4	4	4
56	ENG	4	5	5	5	5	4	4
57	ENG	5	5	5	4	5	4	4
58	MDB	2	3	2	2	2	2	4
59	MDB	4	4	4	4	4	4	4
60	MDB	3	2	2	4	4	4	3
61	MDB	3	5	4	3	5	3	4
62	MDB	5	5	4	4	5	4	5
63	MDB	2	4	3	4	2	2	3
64	MDB	3	3	3	3	3	3	3
65	MDB	1	1	2	2	2	2	2
66	MDB	4	4	4	4	4	3	4
67	UA	4	3	2	2	4	4	4
68	UA	4	4	4	4	4	2	4
69	UA	4	4	4	2	2	2	4
70	UA	2	4	4	4	5	5	4
71	UA	4	4	4	2	2	2	4
72	UA	4	4	4	5	4	4	5
73	UA	5	5	5	5	5	5	5
74	UA	4	4	4	4	4	4	4
75	UA	4	4	4	4	4	4	5
76	UA	2	5	4	1	2	2	4
77	UA	5	5	5	5	5	4	4
78	UA	1	5	1	1	1	2	5
79	UA	2	4	4	4	4	2	4
80	UA	4	2	4	4	4	4	4
81	UA	4	3	4	4	4	4	4
82	UA	5	4	5	5	5	5	4
83	UA	4	4	4	4	4	2	4
84	UA	2	2	2	4	2	2	3
85	UA	4	4	4	4	2	3	4
86	UA	4	2	3	3	4	4	4
87	UA	2	4	2	4	4	4	4
88								
89								
90	Legend					Likert Coding		
91	DCMA	Decision Maker and Administrator				Strongly Disagree-1		
92	DMFR	Disaster Manager and First Responder				Disagree-2		
93	ENG	Bridge-Road Engineers and Supervisors				Neither Agree nor Disagree-3		
94	MDB	Multilateral Development Banks				Agree-4		
95	UA	User Agency-Hospitals, Schools and Police				Strongly Agree-5		

	I	J	K	L	M	N	O	P	Q
1									
2						Health			
3	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
4	4	4	4	3	3	4	4	4	4
5	4	4	4	4	4	4	2	4	4
6	4	4	4	4	3	4	3	4	4
7	3	4	4	3	4	2	4	5	4
8	3	3	4	3	4	2	5	4	4
9	4	4	2	4	4	4	4	4	2
10	4	4	4	4	3	4	3	4	4
11	4	4	4	4	2	4	2	4	3
12	4	4	4	4	4	4	4	4	4
13	4	4	4	4	3	3	3	4	4
14	4	2	4	4	4	4	4	4	2
15	4	2	4	2	2	4	2	4	2
16	4	3	3	4	4	4	4	4	4
17	2	2	2	2	5	2	1	2	2
18	3	4	4	3	3	4	4	4	4
19	3	4	5	3	3	4	4	4	4
20	4	3	3	4	3	4	4	4	3
21	4	4	4	4	2	4	4	4	4
22	4	4	5	5	2	4	4	4	4
23	4	4	4	4	4	4	3	4	3
24	3	2	4	3	4	2	4	2	2
25	4	4	4	4	4	4	4	4	4
26	3	4	3	4	1	4	3	4	4
27	2	2	4	4	4	2	3	2	2
28	3	4	4	4	2	4	3	4	5
29	3	4	5	4	4	2	3	4	4
30	2	4	4	4	4	2	2	4	4
31	4	3	4	4	4	2	2	2	2
32	4	4	3	3	2	4	4	2	4
33	3	3	3	4	1	2	3	3	4
34	4	5	4	3	4	4	2	4	2
35	3	4	4	4	3	3	4	4	4
36	5	4	4	4	4	4	4	4	4
37	4	3	4	4	2	3	4	3	3
38	5	4	4	2	4	2	4	2	2
39	2	2	3	4	3	2	2	3	3
40	4	4	5	4	5	5	5	5	4
41	3	4	2	3	3	4	3	4	4
42	4	4	5	4	4	4	4	4	4
43	4	5	5	5	5	3	3	5	5
44	2	2	4	4	4	2	3	4	2
45	4	3	4	3	4	4	3	4	4
46	4	4	4	3	3	4	4	4	4
47	4	4	3	4	4	4	4	4	4
48	5	5	5	5	4	4	4	4	5
49	4	4	4	4	3	4	4	4	2

	R	S	T	U	V	W	X	Y	Z
1									
2								PCI	
3	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
4	4	4	4	4	4	3	3	3	4
5	4	4	4	4	3	3	4	3	4
6	2	3	4	4	4	4	3	4	3
7	4	4	4	4	4	4	4	3	4
8	4	3	4	5	4	5	4	4	4
9	2	4	4	4	4	4	4	2	2
10	4	4	4	4	4	4	3	4	3
11	3	3	3	3	4	4	4	3	3
12	4	4	4	4	4	4	4	4	4
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14	4	4	4	4	4	4	4	4	4
15	2	2	4	2	4	4	2	4	4
16	4	4	4	4	4	4	4	4	4
17	2	2	2	2	4	4	2	3	2
18	4	4	4	4	4	4	3	3	4
19	3	3	3	4	4	4	2	3	4
20	3	4	3	3	4	4	3	3	3
21	4	4	4	4	4	4	2	4	4
22	4	5	4	4	4	5	4	4	4
23	3	4	4	4	4	4	4	5	4
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27	4	4	3	4	4	4	2	4	4
28	5	4	4	4	5	5	4	5	4
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30	4	4	2	4	4	4	4	4	2
31	2	2	4	4	4	4	3	3	2
32	4	4	4	3	4	4	4	4	3
33	4	4	4	3	5	5	3	4	4
34	2	5	4	2	4	4	2	3	2
35	3	4	4	4	4	4	3	4	4
36	4	4	4	4	4	4	4	4	4
37	3	2	2	3	4	4	3	4	2
38	2	4	4	4	4	4	4	4	2
39	1	2	5	4	4	4	4	2	3
40	4	4	4	4	4	4	5	4	4
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43	4	3	4	5	5	5	3	5	5
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45	4	4	4	4	4	3	3	3	4
46	4	4	4	4	4	4	4	3	3
47	2	4	4	4	4	4	4	4	4
48	5	5	4	4	5	5	4	4	4
49	2	4	4	4	4	4	3	4	4

	AA	AB	AC	AD	AE	AF	AG	AH	AI
1									
2									
3	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34
4	3	4	4	3	3	4	3	3	3
5	3	4	3	4	2	4	4	3	4
6	4	2	2	4	4	4	4	2	2
7	4	2	2	4	5	4	4	4	4
8	4	2	2	4	4	5	4	4	4
9	2	4	4	2	4	4	2	1	1
10	3	4	4	4	4	4	3	4	3
11	3	3	3	3	3	3	3	3	3
12	4	4	4	4	4	4	4	4	4
13	4	2	2	4	4	4	3	3	4
14	4	4	4	4	4	4	4	4	4
15	4	2	2	4	4	2	2	4	1
16	3	4	4	2	3	4	4	3	3
17	4	2	2	4	4	2	2	2	2
18	3	4	2	3	3	4	3	3	3
19	4	4	4	4	5	5	4	3	2
20	3	4	4	3	4	4	3	3	3
21	4	4	2	4	4	4	4	2	2
22	4	5	2	4	2	4	4	4	4
23	4	4	4	4	4	4	4	4	4
24	4	2	2	4	4	4	4	2	2
25	4	4	4	4	4	4	4	4	4
26	3	4	3	3	4	4	3	2	3
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28	5	5	4	4	5	4	4	4	4
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30	4	4	2	4	4	4	4	2	2
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32	2	4	3	3	4	4	3	4	4
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38	4	2	2	4	4	2	2	2	2
39	4	4	4	4	5	5	4	1	1
40	3	4	1	3	3	4	3	2	1
41	4	4	4	4	3	4	4	4	3
42	4	4	2	4	4	4	4	4	2
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44	4	1	2	5	4	2	2	3	3
45	4	3	4	4	3	3	3	3	2
46	4	4	3	4	3	4	4	3	3
47	4	4	2	3	4	4	4	2	2
48	4	4	4	4	4	4	4	3	3
49	4	4	2	4	4	4	3	2	2

	AJ	AK	AL	AM	AN	AO	AP	AQ	AR
1									
2				SCWB					
3	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43
4	4	4	3	4	4	4	4	3	3
5	3	2	4	4	4	4	4	4	4
6	3	4	2	4	4	4	4	4	4
7	4	4	5	4	4	4	4	4	4
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9	1	4	2	2	4	4	4	2	4
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16	3	3	3	4	4	2	4	2	4
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45	4	3	3	3	3	4	3	4	3
46	3	4	3	4	4	4	4	3	3
47	2	4	3	4	4	4	4	4	4
48	4	4	4	5	4	5	5	4	5
49	2	4	4	3	4	4	4	4	4

	AS	AT	AU	AV	AW	AX	AY	AZ	BA
1									
2						SFDRR			
3	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
4	3	2	3	3	4	4	4	4	4
5	4	2	3	4	2	4	3	4	4
6	4	2	2	3	4	4	3	4	3
7	4	4	2	4	1	4	4	4	4
8	4	3	3	4	1	4	4	4	4
9	2	2	2	2	4	4	4	4	4
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29	3	3	4	4	4	3	3	3	3
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31	3	3	2	3	2	3	3	2	2
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45	4	3	3	3	3	4	4	4	4
46	3	2	2	3	3	4	4	4	4
47	4	2	2	3	4	4	4	4	4
48	4	4	4	4	4	4	5	4	4
49	4	3	3	4	4	4	4	4	4

	BB	BC	BD	BE	BF	BG	BH	BI	BJ
1									
2									
3	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61
4	4	4	4	4	4	3	4	4	4
5	4	4	3	2	4	2	4	4	4
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Appendix III

Open ended responses

Link to the Google Docs questionnaire: <https://docs.google.com/forms/d/1VuLVSLEc44tY-l2SdhdbMxxlwqtpe1zK5kq6rtHTvww/edit>

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Participant: 1	
Date of Submitting.	05-11-2022
Department and Designation.	MDB, DRM Specialist
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	The Himalayan arc poses a unique challenge to the region and hence development paradigm need to be tightened to suit the fragile geology and the varying hazard risk of the state. In the absence of risk information, development track has been mainly centered around broad hazard zonation maps. When further overlayed with the exposure (population, lifelines and economy) and vulnerability, the entire state and adjoining areas seems to fall in a unique risk belt that is sensitive to climate change factors, hydrometeorological and geological triggered events. Events beyond a certain threshold or magnitude will not only cause local failures/damage, but the unique interconnectedness of the natural system has a potential for cascading impact and affecting a wider geographical area. Several studies and technical reports backed with geospatial analysis has captured the cause of June 2013 floods and resulting cascade effect/failures. The impact of the event is well captured in the State Government records, joint assessment mission undertaken jointly by GoUK, GoI institutions and the MDBs (including key infrastructure and social sectors). The development footprint in fragile zones / areas violating the development control rules took the maximum blow from the flash floods and debris flow. Impact on the infrastructure was severe and further led to missing links at several nodes across the state. With large number of pilgrims awaiting for immediate relief assistance, the dynamic weather condition and missing /damaged infrastructure further escalated the crisis and posed immense challenge to the Local/District/State Administration. The State Administration with support from the National Government responded to the calamity swiftly, deployed resources for immediate search and rescue, dispatch of essential supplies to the affected population. While several success stories have been documented on effective S&R deployment, it was also challenging to reach to all affected people, especially scattered pilgrims who had limited understanding of the geographical context and no linkages with the people in the State. The State Govt in consultation with the National Government agencies, put together an ambitious Recovery and Reconstruction Strategy which included drawing a support plan from MDBs to fund the Uttarakhand Disaster Recover Initiative (Uttarakhand Emergency Assistance Project, ADB assisted; Uttarakhand Disaster Recovery

Project + Additional Financing, World Bank assisted). The State Government established a Project Management Unit to implement the Uttarakhand Disaster Recovery Initiative. The technical and implementation support from the Line Departments (Implementing Agencies) remained significant and contributed towards successful implementation of activities focused on immediate recovery as well as long term risk mitigation measures. Several new generation activities are still under implementation through an Additional Financing Project.

2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?

The state has undertaken a wide range of DRR actions, including detailed Disaster Risk Assessment and Decision Support System, primarily targeted at Line Departments use. While the challenge posed by geographical constraints and terrain conditions cannot be directly addressed, risk mitigation actions at scales is yet to be adopted by the State and its citizens. From a project mode (UDRP and UEAP) several activities undertaken by the state are considered to be path breaking in the field of DRM, the challenge however remains at the level of line depts. to build on the learnings and incorporate new/best practices in development activities across the state. In the absence of a strong enforcement mechanism that brings together a host of measures such as including risk information in planning and development (risk informed land use planning), mandatory incorporation of codal provision in design of public and private infrastructure, introduction of life safety measures at the community level, it is unlikely to qualify that the problems and challenges posed by a repeat event can go unscathed. Higher magnitude/intensity events limited to a specific geographical area/stretch in the recent past (Feb, 2021) clearly indicates the growing vulnerability and new spread of risks in the existing settlements.

3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?

The 2013 disaster and subsequent ones in the state of Uttarakhand are still fresh in the memory of the citizens. While focused actions initiated by the State Govt towards infrastructure resilience and community empowerment to deal with disaster situation have paid off, it is the residual risk and the new added risk that continues to overwhelm the communities as well as the State Govt entities. The interdependency characteristics between infrastructure to infrastructure, infrastructure to people and associated livelihoods, infrastructure to economy and societal well-being, need to be further de-risked from the phenomenon of climate change impacts/ hydrometeorological and geological driven events, backed with long term financing window/DRFI instruments.

Participant: 2	
Date of Submitting.	05-11-2022
Department and Designation.	PWD Uttarakhand, Chief Engineer
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	Cause-Cloud burst and continuous rain. Impact-Disruption of all type of communication and casualties. State Response-Not in a proficient manner. Strength-Efficient Airforce evacuation, trained SDRF Weakness-needs capacity building of state entities in terms of quick and proficient response to calamities.
2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	There is a need for capacity building of state entities to handle disasters as well as resources for making the state disaster resilient.

3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?	After post disaster, initiatives have been taken and being implemented, in terms of all the fronts mentioned above, with the help of external funding agencies.
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Participant: 3	
Date of Submitting.	05-11-2022
Department and Designation.	Executive Engineer, Public Works Department, Uttarakhand, India
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	In June 2013, the north Indian state of Uttarakhand and adjoining regions experienced heavy rainfall due to a cloud burst causing devastating landslides and flash floods. The rainfall during the period of June 15-18 recorded to be 3.75% above the normal rainfall resulted human live loss and massive devastation. It also caused massive damage to public infrastructure like roads, bridges, etc. in the stated which resulted in the lost connectivity for a large population. In the aftermath of tragedy, the Government of India requested assistance from the World Bank and an emergency project triggered by a natural disaster is started. The project is named as Uttarakhand Disaster Recovery Project (UDRP) and one of its major components is to restore the connectivity lost due to disaster through reconstruction and restoration of damaged roads and bridges. Frequent exposure to such natural calamities and experience in handling such situations is definitely our strength. Almost in every department of the state, there is a team of dedicated professionals who can help the government, quickly responding to the calamities and disasters. Capacity building in terms of procurement and contract management is needed to implement long term mitigation measures.

2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	There are several challenge which may come across due to such events, like failure to assess the risk, damage to public infrastructure, lost connectivity to remote areas, impact on socio- economic condition of the people, lack of co- ordination between different agencies, etc. Integration of disaster- risk into mainstream development planning in very necessary for the disaster- prone states like Uttarakhand.
3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?	The situation definitely got better after the 2013 event. State had learned how to respond to such disasters and calamities in the short term as well as long term. Capacity building was made in terms of overall disaster management, contract management and project management due to projects of multi- lateral agencies related to disaster management and restoration of damaged infrastructure as well as other development projects. Old damaged roads and bridges were reconstructed and several new village roads, other district roads, public buildings and bridges were constructed with the help of the World Bank and ADB funded projects. New technologies for early warning system and management of disaster were also introduced in the state with the help of these projects. As the external agencies and consultants has contributed in various projects, the technical capabilities of the departments also developed.

Participant: 4	
Date of Submitting.	5/16/2022
Department and Designation.	Disaster Risk Management Consultant
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	Cause- GLOF, heavy rains and floods. Impact- there were about 100,000 pilgrims who were stranded, washed off by GLOF and floods and abandoned. There were many houses constructed in river bed upto the levels river had not generally crossed. This time all such properties got washed off taking people along with it. Heavy rains resulted in slope slides and washing off of roads, and government was almost cut off from the severely disaster affected locations., Evaluation- State response- Police got active, administration was established in the affected locations, emergency evacuation started, it was one of the largest air evacuation globally. Given roads were stranded, food supply was a big problem, reaching to far off location was a challenge, identification of missing and bodies recovered people was a problem. Other States were also asked to join in the rescue and support. Evaluation- Every line department conducted their own preliminary assessment, UNDMT also conducted pilot surveys in 5 affected regions, later, World Bank conducted damage and loss assessment which was basically reverification and confirmation of findings of the evaluation government department had conducted
2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-	Early identification of any small or bigger hazard events is the first key to preparedness. Secondly, impact forecasting is still a distant dream. The weather forecasting is done, however what such a forecast can lead to is not provided by the system, which doesn't allow the system to take required actions. Even if to some level, impact forecasting is done now after the risk assessment and geo-spatial platform are available, the infrastructure for dissemination of the forecast to the people is yet to be strengthened. SDRF is created, and is well equipped, but this is a small force and require support from other first responders like police, fire and emergency department, homeguards etc, they are yet to be equipped with training and resources. Community trainings as first responders need to be expanded. The development plans are yet to be evaluated based on the disaster risks, the construction in risk zones are yet to be stopped. The IRS system is yet to be effectively used. USDMA has been created, which doesn't have required staffing,

Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	without which it is difficult to expect emergency operations center running and operating during emergencies. The technical staff who understanding risk assessment data and geo-spatial platform are yet to be appointed.
3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?	Post 2013, the situation is much better. SDRF was created, equipped and trained. Now the force is operating and saving lives on a regular basis. The capacity of fire and emergencies department is also strengthened with equipment. SDRF is constructing its training campus also. The State has one of the finest GIS based risk assessment conducted, and also has a GIS decision support system. The State has better road and bridge network and connectivity has improved. Many buildings have been constructed with seismic resilience and are also retrofitted to make them usable even after a disaster strikes. Health infrastructure and systems are strengthened. Risk perception has improved but more work need to be done in this area at all levels including from community, administrative and political level. Departments are yet to be taught on how to use disaster risk data to develop their development plans resilient.

Participant: 5	
Date of Submitting.	5/17/2022
Department and Designation.	Disaster Risk Management Specialist, World Bank
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	The cause was an extreme rain event leading to a cascade of events, impact was huge in terms of number of people killed and loss to property. The state was simply not ready to respond to an event of this scale and complexity.
2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	Post event the state has ramped up in certain areas like risk assessment, response efficiency, however it has continued to build up significant vulnerabilities due to the kind of infrastructure and development model it has chosen/ has been forced upon it. The state has not been able to adequately integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy
3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness	While there has been some sustained work in risk-reduction investments, it remains marginal in larger state affairs. On the whole the state is more vulnerable to natural calamities that it has been in the past. The state has not been tested with an equally complex or severe event, but even in smaller events it has not fared well.

and perception of the community as well as the State entities)?	
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Participant: 6	
Date of Submitting.	5/18/2022
Department and Designation.	Sr Consultant, Uttarakhand State Disaster Management Authority Govt of Uttarakhand India
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	In the month of June 2013, the region suffered its worst disaster with huge loss of lives & wide spread destruction. The entire region was hit by heavy to very heavy rainfall, possibly due to the fusion of westerlies with the Indian Monsoonal Cloud system, resulting into flash floods & landslides over a wide area. The five districts (Bageshwar, Chamoli, Pithoragarh, Rudraprayag & Uttarkashi) were the worst affected and a large population in several areas were cutoff across the state. The incident caused wide spread loss of lives & damage to infrastructure, property & environment with resultant impact on the livelihoods and local economies. More than nine million people were affected by the episodes of flash floods. The impact of the disaster was unfathomable for the local population as well as the pilgrims. The administration launched a huge rescue & relief operation immediately with the assistance of the centre, accomplishing one of the biggest rescue & relief operation, where more than one lakh persons were evacuated to safe places. The Army, the IAF, Para Military Forces, the state Admin and NDRF worked tirelessly to bring some comfort to the suffering population. The disaster caused huge devastation to almost all development facets in the state. The elements of DRR need to be very innovatively incorporated into all the development and reconstruction plans of the state at a strategic level. The reconstruction activities post disaster in the affected areas should be driven by well considered policy initiatives duly backed with legislation and public awareness campaign.

2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	The Uttarakhand disaster 2013 exposed the infirmities in the disaster management system at ground level that prevailed when the tragedy struck and are needed to be addressed for safer and sustainable development in the region. It is noteworthy that the weaknesses exposed do not relate only to preparedness but to all the constituents of the disaster management system including risk mitigation, reconstruction and recovery. Emergency rescue & relief operation during the Uttarakhand disaster were executed by multiple stakeholders under most challenging climatic conditions in extremely inhospitable mountains terrain. However, challenges in disaster management observed during the incident particularly in response and preparedness component, need immediate attention. There are few recommendations which are as- 1) Proper functioning & coordination of SDMA/ DDMA and other agencies involved in disaster mitigation & response need to be made more effective. 2) Investments in infrastructural development for monitoring and forecasting related to weather, glacial lakes, river flow etc. 3) Improved EWS may be deployed in the inaccessible parts of the catchments areas on a permanent basis. 4) Existing emergency communication system is needed to be reviewed regularly to ensure last mile connectivity during disaster. 5) Emergency support organizations at state level viz; SDRF/ Police/ Civil Defense & Home Guards be organized, trained & equipped to perform their roles in response operations. 6) Hazard, vulnerability, capacity and risk assessment (HVCRA) must be exercised to assess risks for the entire state for development of disaster management plans.
3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the	Yes, post 2013 disaster, the situation has got much better post. With financial support from World Bank, the Uttarakhand State Government engaged experts to complete a disaster risk assessment of the entire state so that it can understand the threat from natural hazards and the exposure of communities & infrastructure. The study has assessed the threat and potential consequences of flooding (both fluvial & flash floods), earthquake, landslides and industrial hazards in Uttarakhand. A comprehensive inventory of data has been developed and has assessed the likelihood and consequences of these hazards in future. This is an excellent attempt to develop an integrated disaster risk inventory for the state and is an important step to support state's future decision-making & planning.

**community as well as
the State entities)?**

Participant: 7	
Date of Submitting.	5/17/2022
Department and Designation.	Uttarakhand State Disaster Management Authority, Executive Director
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	The disaster of 2013 is owed largely to abnormal meteorological behaviour – early arrival of monsoon, confrontation of the SW monsoon front with the Westerlies, heavy rainfall at the very onset of monsoon, heavy rainfall in the upper region (Alpine zone) that generally receives light rainfall or solid precipitation (snowfall) and sudden breach of Chorabari Tal. The impact of the 2013 incidence was exacerbated by abnormally high human congregation, particularly in the Mandakini valley where people have to trek for 12-13 km from Gaurikund to reach Kedarnath shrine that is revered by Hindus. The same is attributed to (i) late opening of the shrine, (ii) High Court order prohibiting mules on the pedestrian route, (iii) disrupted helicopter service due to bad weather, and (iv) continuous rainfall slowing down the pace of movement. 05 districts were worst affected by the incidence that caused death of around 4000 persons. There was massive loss of infrastructure resulting in disruption of essential services. Vehicular movement, particularly in Garhwal region came to stand still due to disruption or breaching of roads at various places by landslides or toe erosion. More than 150000 persons were thus stranded at various places. State responded to the best of its capacity and assistance of various central government agencies including uniformed forces was taken. Arrangements were made for organising relief camps and safe evacuation of stranded persons. 69 permanent and temporary helipads were quickly activated across the state. Besides 17 civilian choppers hired by the state government 54 Indian Air Force (IAF) choppers and fixed wing crafts, 7 Army Aviation choppers and 4 choppers of other states were pressed into service. More than 39165 persons were evacuated by air alone. Shortcomings observed during the 2013 disaster include the following: (i) Lacking redundancy in telecommunication – lack of information exchange due to disrupted communication was a major issue. (ii) Lacking arrangements for regular media briefing. (iii) Decapacitation of senior officials – DM Rudraprayag replaced on June 21, 2013. (iv) Lacking arrangements at SEOC for information exchange with next of kin of missing or stranded persons. (v) Problems faced in the induction of response forces due to poor / disrupted assessability. (vi) Lacking specialised response force of the state. (vii) Response forces coming from outside unfamiliar with local ground realities. (viii) Coordination and information exchange with various response agencies.

(ix) Lacking robust warning generation and dissemination infrastructure. (x) Lacking provision of registration of pilgrims and tourists – nobody conclusively knew the numbers that were actually affected. (xi) There was no upper limit of the persons to be allowed. (xii) As the evacuees had lost all their belongings they were not in a position to travel back on their own. No arrangements were in place for supporting the evacuees. (xiii) Single access to most destinations – lacking alternative routes. (xiv) Limitation of airspace due to narrow valleys. (xv) Limited helipads – air operations be hampered despite ample helicopters. (xvi) No helicopter refuelling facility – time wasted in refuelling. (xvii) Affected persons coming from across the nation with no familiarity with the area and having no acquaintances around. Linguistic differences hampered information exchange with both evacuees as also NOK of the stranded or missing persons seeking information. (xviii) Delay in getting RGI guidelines for declaring missing persons dead – delay in disbursement of Death Certificate and admissible ex gratia relief – enhanced trauma of the family members of persons going missing. (xix) Lacking needs assessment – relief supplies received not always required. (xx) Inadequately manned SEOC / DEOC with no personnel for data analysis. (xxi) Preliminary response focused on Mandakini valley alone. (xxii) As the incident affected people from across the nation officials from different states were deployed to assist persons of their state. Arrangements were lacking for providing required logistics and other support to them. (xxiii) Inadequate logistics arrangements for the state officials deputed in the disaster affected area. (xxiv) Demobilisation of resources was a major challenge. (xxv) Officials deputed by different departments were inducted in the disaster affected area without formal briefing on their roles and responsibilities. (xxvi) The personnel were at the same time relieved without debriefing which often resulted in vacuum and disrupted continuity of functions. Formal documentation of important lessons learnt was also missed due to this. (xxvii) Soon after the disaster of 2013 a number of Public Interest Litigations were filed in the apex court alleging non-performance on the part of the state and seeking immediate judicial intervention for providing relief to disaster-affected people. There were at the same time probes by the delegations of various quasi-judicial statutory bodies which often sought specific information pertaining to the effect of disaster on their interest group and measures taken by the state to cater to their requirements. No arrangements were in place for addressing legal issues and the data was also not specifically segregated to cater to the queries of the various commissions.

2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?

Many researchers attribute extreme rainfall incidence resulting in 2013 disaster to climate change. Moreover February 2021 flash flood in Dhauliuganga valley during lean flow period and October 2021 post-monsoonal extreme rainfall incidences are also being attributed to climate change. With climate change impacts becoming increasingly prominent researchers have express possibility of recurrence of similar incidences in future. Environmental groups have already started to line up to hold hydropower projects as also other major infrastructure projects responsible for these disasters. All this could have an adverse impact on the fate major infrastructure projects in the Himalayan region. The region could thus face scarcity of capital investment which in turn is to have adverse impact on the pace of growth and socio-economic development of the region. Recurring disasters in the region could at the same time be a disincentive for companies to design and offer cost effective and viable risk transfer instruments.

3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?

The state has undertaken huge investment on the aftermath of 2013 disaster on various risk reduction initiatives that include (i) creation of SDRF, (ii) registration of pilgrims and tourists, (iii) upper limit for people visiting Char Dham, Hemkud Sahib and Gaumukh, (iv) risk assessment of the state to earthquake, landslide, flood, flash flood and industrial hazards, (v) morphometric analysis of major rivers, (vi) flood warning infrastructure along Bhagirathi – Ganga, (v) establishment of decision support system, (vii) strengthening of meteorological observation instrumentation including setting up of two Doppler weather radars, (viii) provision of satellite phones at Tehsil level as also 250 remote villages, (ix) warning dissemination using common alert protocol, (x) construction of 37 new helipads, and (xi) pilot treatment of vulnerable slopes. Despite this the state has failed to put in place a sound human resource policy for managing various disaster risk reduction functions as also to facilitated smooth operation of the systems put in place with huge investment out of public exchequer. This is to adversely affect optimal utilisation and impact of the investment made on DRR together with lacking institutional memory and procedures remaining individual driven rather than system driven could be. The state has at the same time failed to continue innovative research initiatives that it had been continuing for long. Continuous and productive engagement with civil society and voluntary organisations is at the same time lacking. There at the same time seems a lacuna in the functions of the State DM Authority that has been relegated to the role of an advisory body by the Disaster Management Act, 2005 with all executive powers and functions vested in State Executive Committee.

Participant: 8	
Date of Submitting.	5/18/2022
Department and Designation.	Department of Disaster Management and Additional Program Director
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	A major disaster struck in several parts of Uttarakhand after heavy rainfall on June 2013. This heavy precipitation resulted in flooding of rivers, both in the upstream and downstream areas. Due to the high velocity and volume of water flowing with the river loaded with sediments, boulders and sand, numerous landslides occurred along the river valley. The landslides and toe erosion by the river caused breaching of the roads / highways at many places and washed away several bridges. State response at the time of disaster in the year 2013 was overstretched because of limited resources and capacity to handle such a calamity. Being a small state, the response mechanism was not fully equipped as required, during operations and quick rehabilitation. As Uttarakhand is a one of the small states in India, response/operation in decision making is quicker due to well established interconnections between different departments. One of the biggest drawbacks of the state is to carry out emergency operations due to its harsh and varied geographical and climatic conditions, limited technical resources and dependency on outside agencies for funds.

2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?

Holistically disaster management is a key challenge to reduce the impact of extreme events before, during and after extreme events. This also includes preventive technical/structural measures as well as a focus on socioeconomic aspects to reduce vulnerability to hazards. This will include sector base planning where all stake holders will take part to reduce the impact of disasters in future. It is also important to note that disaster risk management and management of climate change impacts share the same objectives, presenting a major challenge and opportunity to bridge current disaster risk management efforts with climate change adaptation measures.

3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?

After the 2013 flood, Government of Uttarakhand (GoUK) has built the capacity of local institutions to mitigate risks in various areas by strengthening capacity through enhancement of disaster risk management. Various awareness programs/drives have also been undertaken to increase the level of awareness among the first responders to respond to emergencies better. The state has also taken measures to enhance DRR knowledge, develop an early warning system, as well as enhanced the emergency response capacity of the Uttarakhand State Disaster Management Authority (USDMA).

Participant: 9	
Date of Submitting.	5/18/2022
Department and Designation.	World Bank Group
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	Not applicable.
2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	It will be critical for the State of Uttarakhand to take a strategic approach to build long-term resilience and strengthen preparedness given the vulnerability context of the State against the impact of climate change. Anything I said cannot be quoted elsewhere. All views recorded here are mine.
3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?	Based on my personal understanding, the impact of various interventions under the project has been meaningful. However, an official comprehensive assessment will be conducted in the implementation completion and results report once the project closes. Therefore, anything I said cannot be quoted elsewhere. All views recorded here are mine.

Participant: 10	
Date of Submitting.	5/28/2022
Department and Designation.	in private capacity
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	2013 tragedy was an enormous one and first of its kind in the country. Till that day the concept of glacier melting and impact of hydro to such extent was not thought of. However the government both centre and state along with army moved in very quickly and did its level best to rescue people. The issue of the terrain and issue of bad weather affected the rescue mission. Some valiant heroes lost their life in the rescue mission. It was long rescue mission. Cause – heavy rains and sudden melting of Chonburi glacier. Impact – it created unprecedented floods wiping out many villages and the flood level at downstream was of unimaginable heights. It cut off bridges and roads and submerged many public buildings and vehicles. Evaluation of state response – the state response was immediate and many were rescued due to the state effort. In fact due to terrain people had to be rescued by helicopter as well as many mountaineers were pressed into rescue. Strengths: immediate ground presence of state officials which helped in better rescue. Weakness: early warning system from IMD could have averted this kind of deluge. Also at that time the state did not have a disaster force which has been developed after this mishap. Break down in communications, roads and haphazard buildings built without planning were some deficiencies which impacted the state. Also the influx of lot of pilgrims who were not registered at time affected the search and rescue operations.

2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	This state is prone to small disasters like landslides or cloudburst every year, and normally such disasters happen at one place. In 2013 the disaster touched the entire state affecting most of the districts. People and government are more knowledgeable about disasters, listen to early warning systems, and are able to take steps for prevention. The new infrastructure is built with resilience and proper codes while the old infrastructure is being retrofitted to highest standards of resilience. The state has integrated disaster risk into main stream development planning, however construction in the field especially by private owners are not up to the mark and will require strong enforcement from the government. The state has already constituted state disaster response force and has operationalized it. State has implemented DSS and EWS which gives warning about such weather events well in time. State disaster monitoring agency is leading the coordination and response and hence the response to disasters are in better coordinated and timely manner. The impact on economy has been minimized but the impact is there and the painful part is loss of life which affects the families and dependents. Use of satellite phones as well as better network coverage has helped communication. District officials are trained and briefed on the disasters and how to handle them. The key challenge if the disaster is state wide then resources maybe constrained in rescue mission but if the disaster is in a confined place then rescue can be focused and completed with ease.
3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?	People and government are more knowledgeable about disasters, listen to early warning systems, and are able to take steps for prevention. The new infrastructure is built with resilience and proper codes while the old infrastructure is being retrofitted to highest standards of resilience. The state has integrated disaster risk into main stream development planning. The state has already constituted state disaster response force and has operationalized it. State has implemented DSS and EWS which gives warning about such weather events well in time. Use of satellite phones as well as better network coverage has helped communication. District officials and communities are trained and briefed on the disasters and how to handle them.

Participant: 11	
Date of Submitting.	5/25/2022
Department and Designation.	Finance, Secretary Finance to the Government of Uttarakhand
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	The 2013 calamity was due to the heavy rainfall which caused the melted Chorabari Glacier to break open with a burst, cresting the Mandakini river, and flooding the pilgrimage centre of Kedarnath which had a heavy congregation of pilgrims. The gushing water enroute due to the volume of water and the altitude difference gained heavy momentum and carrying big boulders damaged many townships down stream causing loss of life and property. The change in climatic conditions, overall temperature rise and the location of Kedarnath directly below the impact area of the glacier caused the disaster. The loss of life was estimated at around 5000 people. The damage to public and private property was huge along with loss of livelihood for the people living in the area. The state was not geared up for adequate response immediately, as advanced warning mechanisms and disaster response teams were not in place during those times. It was not envisaged that a disaster of this scale would occur there, as it was unprecedented and the pilgrimage to Kedarnath was being carried on from times immemorial. But, within a short time, the state managed to get the help from the central government, army, para military organizations for immediate rescue and relief. The state governments of other states also provided a lot of relief measures. The reconstruction activity took more than several years, with help from multinational banks and the support of the central government. The strength of the state was the resilience of the people and the positive attitude of the people. The Deficiencies were not having prepared for a disaster in advance, knowing the likelihood of such an event given the location of the pilgrimage centre and the Himalayan terrain.

2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?

There are four main pilgrimage places in Uttarakhand namely, Gangotri, Yamunotri, Kedarnath and Badrinath which are the most important pilgrimage place for around 1 billion Indians. With the road and air connectivity improving the number of pilgrims every year is increasing manifold and the likelihood of such incidents in the higher altitudes given the higher temperatures due to climate change will only increase the chances of disasters. But, now the disaster management department has considerably increased its capability to cope up with such incidents. The Risk assessment of all these important locations has been done by the department and advanced warning equipment have been located in the sensitive areas. The prediction from the weather departments are taken in frequent intermittency and closely monitored. State Disaster Response Team and District Disaster Response Teams are formed and trained for such eventualities. Disaster Response teams are constituted in every village to respond to such situations and given the basic training and equipment also. Very good communication plans are drawn up with a repository of all equipment, manpower, vehicles available in every village, so that in case of such an eventuality, there is a ready reference of the logistics available in the nearest location. All new constructions and infrastructure is complying with the standards required as per the norms stipulated for the various zones in various disaster categories. The local masons and construction workers were trained specially for this purpose, so that they incorporate these measures while building private homes too. Wide spread technical hands on training was given for this purpose. As the area is not prone to disasters the adapting capabilities of the people is quite high. But, with advanced technologies and communication network the warning systems have really helped them to brace for the events in a better fashion. The main economy of the state of Uttarakhand is dependent on the Char Dham Yatra. The hotels enroute get their annual income earned in this season itself. Most of the commercial vehicles are bought keeping in view the traffic during the pilgrim season. Along with this the ancillary services like the restaurants, mules, ropeways, porters, roadway buses, resorts had no business for a few years, as the number of people coming for yatra was affected thus affecting the business and economy. As most of the menfolk engaged as porters, shopkeepers in Kedarnath got washed away, the bread earner of many families were lost affecting the family life and society life in many villages. The inter agency coordination mechanism has tremendously increased. The coordination with army, airforce and para military forces like ITBP etc is stream lined. Coordination with meteorological department is established on a real time basis. Various departments within the state like Roadways, civil aviation, food and civil supplies and police now

respond in a coordinated manner due to SOPs put in place. Decision support systems have improved due to the data collection put in place. Now there is registration of the pilgrims. There is tracking of vehicle giving a fair idea of the number of people in each town ships at any given point of time. Continuous feed back loop of weather forecast lets the administration to control the number of people visiting the last point as per safety norms. Now the regular planning of infrastructure has disaster mitigation components inbuilt into it. The awareness and sensitivity in general public, officials and public representatives has increased tremendously after this incident. The usage of science and technology in risk policy has also increased and the state is better equipped to address disaster when compared to the what it was a decade back.

3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?

The situation is definitely far better now than it was pre-disaster. The awareness of the people about the mitigation methods and the new scientific developments and the need to incorporate them in pilgrimage centres was very low earlier. The fatalistic mode of the thinking of the pilgrims also was a cause for not insisting on these facilities to be present in these localities. But, now the public demands and questions the public representatives on what measures are taken for their own safety, thus pressuring the government of the day to keep the advanced warning systems, and other measures upto date. The monitoring from the central government is also very good, thus improving the over all efficiency levels in the system. Huge investments were done in strategic public infrastructure post disaster. The schools, colleges and institutions which got washed out were reconstructed with resilient structures to withstand future calamities. The knowledge level of the populate, officers and technical staff has tremendously increased. The technical capacities of the engineers are enhanced. The community is involved in these measures. The local community radios are making weather warnings a continuous feature, when they are interacting in the valleys with audience of those particular areas. Due to regular drills and practice sessions, the capacity to respond to disaster has also gone up. In Uttarakhand, we regularly see cloud bursts and floods in contained areas affecting one or two villages every season. There is a marked improvement in the way it is dealt with post this major 2013 disaster, thus, emphasizing the need for training and capacity building in disaster management.

Participant: 12	
Date of Submitting.	5/13/2022
Department and Designation.	Joint Secretary , Government of India
1. As an Administrator or a Decision Maker or Disaster-Manager (as per the position you hold), what do you think about this June 2013 hydrometeorological calamity (Cause, Impact, Evaluation of State response, Our Strengths and Deficiencies)?	The main cause of the event was the breach of a Himalayan glacier. The state government after receiving information immediately swung into action. The state government had in place a robust system of dealing with disasters. The whole machinery of the state government and all important departments like the revenue department, the Police Department, the Civil Aviation department, the home guards department, the health department, the public works department, the drinking water supply department and all other important department were immediately pressed into service.
2. In your perspective, what key problems and challenges may such events pose in future (in terms of Risk perception, Risk assessment, Response efficiency, Preparedness, Infrastructure Resilience levels, Adaptation & Coping capacities, impact on economy and society, inter-agency coordination, Decision support systems, State's will to integrate Disaster-Risk into mainstream Development Planning or the institutional assimilation of Science & Technology into the Risk Policy)?	There are many challenges such events will pose in future. first of all it is highlighted the fact that we should have an early warning system in place for various disasters. After the initial advisory is received we should have data coming from the field and based on that data all are field officers dealing with disaster management should be activated. The response will be as per standard practise and according to the disaster being faced by the local units. We need a decision support system for utilising the inputs coming from the field and for effective disaster response. The resilience level of community as well as the infrastructure needs to be upgraded. These are so have a wide impact on the livelihoods of people and also severely impact the infrastructure, hence all further planning should incorporate these two features. Apart from that as the disasters are becoming more frequent it disaster risk and disaster planning in two are mainstream development planning, there should be much better interagency coordination and the whole institutional mechanism of dealing with disasters should be strengthened.

3. After the 2013 fiasco, has the situation got any better post the risk-reduction investments (in strategic public assets, knowledge augmentation, capacity building, technical capacity enhancement, participatory planning, formal dissemination of DRR knowledge and verities, foster risk awareness and perception of the community as well as the State entities)?

After the 2013 disaster the state has taken many efforts to upgrade its response mechanism. First of all the state had strengthened the state the Astor management therapy. A new structure with new enhanced powers and the new institution mechanism was put in place. The state also raised a state disaster response force for dealing with such situations. Lot of capacity building and training has been given to field units all across the state. A new incident response system, asper Government of India policy was initiated and training was given to all stakeholders in this regard. Disaster planning was integrated into all the schemes of respective departments. Lot of capacity building was also done of community stakeholders.

	A	B	C	H	I	J	K	L	M	N	O
1											
2	Appendix IV Progress of Medium and Long Term Reconstruction Package/Special Plan Assistance-Reconstruction as of March 2022										
3											(Rs in Lakh)
4	S.No.	Name of Projects/Schemes	Total Projects Cost	Amount Released by Govt. of India			Amount Released by State Govt.	Expenditure till date	Amount of UC's	Physical Progress	Remarks (UC's Enclosed)
5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
7	<u>1</u>	Agriculture				0.00					
8	1	Reconstruction of Departmental Buildings Boundary wall Seed Store Water Drainage System and Protection Wall in Disaster effected two Districts	51.00	51.00		51.00	50.93	1399.93	1399.93	work completed	
9	2	Reconstruction of Check Dam Bounded Wall Breast Wall Retaining wall Spur Plantation and other soil conservation works in the effected five districts	1349.00	1349.00		1349.00	1349.00				
10		Total Agriculture	1400.00	1400.00		1400.00	1399.93	1399.93	1399.93		
11	<u>2</u>	Fisheries				0.00					
12	1	Fish Farm Gangori Uttarkashi	63.33	63.33		63.33	148.85	148.85	148.85	work completed	
13	2	Fish Farm Barengana Chamoli	85.67	85.67		85.67					
14	3	Construction/Reconstruction of Fish Pound	51.00	51.00		51.00	51.15	51.15	51.15		
15		Total Fisheries	200.00	200.00		200.00	200.00	200.00	200.00		
16	<u>3</u>	ICDS				0.00					
17	1	Sustainable Livelihood Approach for Women and Adolescence Girls in Natural Disaster affected area	508.02	508.00		508.00	508.00	508.00	974.00	90% Work Completed	
18	2	Cure help for the victims of natural Disaster area	483.00	483.00		483.00	466.00	466.00			
19		Total ICDS	991.02	991.00		991.00	974.00	974.00	974.00		
20	<u>4</u>	Training				0.00					
21	1	Establishment of ITIs in disaster effected districts	5000.00	5000.00		5000.00	4644.16	4223.66	4223.66	90% Work Completed	
22		Total Training	5000.00	5000.00		5000.00	4644.16	4223.66	4223.66		
23	<u>5</u>	PWD				0.00					

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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
24	1	Construction of 14 nos bridges under NBCC in District Uttarkashi	9336.61	9336.61		9336.61	6797.49	6797.49	6485.77	10 No.	
25	2	Construction of 80 mts Span Motor Bridge over River Mandakini in M 2500 of Chunni Band to Vidhyapeeth Motor Road 1No	268.00	268.00		268.00	0.50	0.50	0.50	work close	
26	3	Widening and Strenthning of Vijaynagar Taila Motor Road Km 1 to 20	2662.33	2800.00		2800.00	2610.11	2411.80	1960.11	work in progress	
27	4	Widening and Strenthning of Banswada to Basukedar Km 1 to 12	1135.87	1772.00		1772.00	1135.87	1115.99	1104.46	work in progress	
28	5	Reconstruction and Repair of damaged road surface due to disaster in June 2013 in District Uttarkashi Chamoli Rudrapraya Pithoragarh and Bageshwar 43 No	1201.76	1201.76		1201.76	1046.54	1046.54	1046.54	30 work completed	
29	6	Reconstruction of damaged 12no Of works by natural calamity in district Rudraprayag	653.17	653.17		653.17	580.78	580.78	580.78	09 work completed	
30	7	Reconstruction of damaged 91 nos Of works by natural calamity in district Uttarkashi	1668.63	1668.63		1668.63	888.78	888.78	888.78	75 work completed	
31	8	Reconstruction of damaged 47 nos Of works by natural calamity in District Bageshwar	385.76	385.76		385.76	385.76	385.76	385.76	47 work completed	
32	9	Reconstruction of damaged 32 nos Of works by natural calamity in District Bageshwar	117.64	117.64		117.64	99.44	99.44	99.44	30 work completed	
33	10	Construction of damage wall and renewal work of Tawaghat Narayan Ashram motor road km 11 to 37	1150.00	1150.00		1150.00	0.00	0.00	0.00	Work Close	
34	11	Improvement of internal road at Dharchula Town PC work in km 0 to 2 point 36 km	200.00	200.00		200.00	0.00	0.00	0.00	Work Close	
35	12	Titoli to bunga link motor road km 2	156.30	156.30		156.30	0.00	0.00	0.00	Work Close	
36	13	Improvement and Reconstruction of Kapkote Pindari Galacier motor road	99.40	99.40		99.40	90.29	90.29	90.29	01 work completed	
37	14	Reconstruction of Damaged walls and scuppers of Kapkot Karmi motor road at Km 6 to 17	53.46	53.46		53.46	0.00	0.00	0.00	Work Close	

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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
38	15	Reconstruction of Damaged walls of Kapkote Pindari Galcier motor road at km 5	50.00	50.00		50.00	50.00	50.00	50.00	01 work completed	
39	16	Reconstruction of Damaged walls AND Causeway of BDDK motor road at Km 7 10 11 12 14	27.97	27.97		27.97	0.00	0.00	0.00	Work Close	
40	17	Renewal of dhunda ghnari motor marg to p c	43.24	43.24		43.24	35.91	35.91	35.91	01 work completed	
41	18	Renewal of Uttarkashi Ghansali Tilvada motor marg upon p c	127.00	127.00		127.00	133.98	133.98	133.98	01 work completed	
42	19	Renewal of bhramkhal jugda motor marg to p c	157.79	157.79		157.79	130.83	130.83	130.83	01 work completed	
43	20	Renewal work of p c silkyra bangon chapda sroth motor road km 26 and 35	124.92	124.92		124.92	109.24	109.24	109.24	01 work completed	
44	21	Renewal work of p c brathi banchora badrigaad motor road km 22 23 32 33 43 point 30 to 53 point 30	390.47	390.47		390.47	344.88	344.88	334.88	01 work completed	
45	22	Renewal work of pc udkhola zibya tandol moyor marg km 1 to 5	122.15	122.15		122.15	92.83	92.83	92.83	01 work completed	
46	23	Renewal work of pc banchora bangaon motor raod km 1	24.43	24.43		24.43	21.31	21.31	21.31	01 work completed	
47	24	Work of opening communication of tiladi shid motor road	115.00	115.00		115.00	115.00	115.00	115.00	01 work completed	
48	25	Work of opening communication of jhumrada kawalgaon moar road 2 number missing bridge	80.00	80.00		80.00	136.16	136.16	136.16	01 work completed	
49	26	Khotiyal sain sanwari sain motar road km 4 to 8	78.48	78.48		78.48	20.00	20.00	20.00	Work Close	
50	27	Birhi Gouna motar road km 6 7 and 11 to 13	92.66	92.66		92.66	12.21	12.21	12.21	Work Close	
51	28	Thralli Ghat motar road	25.00	25.00		25.00	17.99	17.99	17.99	01 work completed	
52	29	Lolti Kasvinagar motar road	45.00	45.00		45.00	6.93	6.93	6.93	01 work completed	
53	30	Lolti Malbajwad motar road	60.00	60.00		60.00	8.99	8.99	8.99	01 work completed	

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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
54	31	Kulsari Bjwad aalkote motar road	40.00	40.00		40.00	3.96	3.96	3.96	01 work completed	
55	32	Kulsyari Alakot Dharvaram Gairwaram motar road	74.00	74.00		74.00	5.93	5.93	5.93	01 work completed	
56	33	Deval kandai sawar motar road	187.50	187.50		187.50	24.97	24.97	24.97	01 work completed	
57	34	Narayanbagad chopta motar road	75.00	75.00		75.00	13.28	13.28	13.28	01 work completed	
58	35	Gwaldam Nandkeshari motar road	25.00	25.00		25.00	25.15	25.15	25.15	01 work completed	
59	36	Construction of Slab Culvert Drainage and Damaged wall on Mayali Guptakashi Motor Road Km 1 to 39	350.00	350.00		350.00	415.00	414.62	413.73	01 work completed	
60	37	Construction of Slab Culvert Drainage and Damaged wall on Rudraprayag Chopra Kurjhan Kandai Motor Road	50.00	50.00		50.00	79.26	79.26	79.26	01 work completed	
61	38	Construction of 85mtr span suspension bridge over Alaknanda River Near Dhuyeli and Dharkot	337.50	337.50		337.50	0.00	0.00	0.00	work close	
62	39	Construction of 95mtr span suspension bridge over Alaknanda River at Nirwali Dharkot	377.51	337.50		337.50	147.16	7.16	7.16	work in progress	
63	40	Construction of 75mtr span suspension bridge over Alaknanda River at Dhuyeli	353.37	308.00		308.00	353.37	298.58	298.53	work in progress	
64	41	Improvement of Durgadhar Bawai Tilwara motor road in km 0 to 21 BM SDBC	1548.26	1630.48		1630.48	1548.26	1545.08	1461.10	work in progress	
65	42	Reconstruction and improvement of Kakada Parkandi Kandara motor road km 1 to 4 including 2 RCC bridge 12 mtr span	398.00	398.00		398.00	254.10	254.10	179.29	work in progress	
66	43	Reconstruction and improvement of Mohankhal Badav motor road km 2 to 4 including 2 RCC bridge 10 mtr span SPA RECONSTRUCTION	228.00	228.00		228.00	246.66	246.66	196.86	work in progress	
67	44	Reconstruction and improvement of Ukhimath Vidhyapeeth bridle road in km 1 to 3 point 10	62.00	62.00		62.00	95.21	95.21	95.21	01 work in progress	
68	45	Reconstuction and Opening communication in Gaurikund Rambada Sonprayag motor road and Gaurikund to Kedarnath	56.80	56.80		56.80	0.00	0.00	0.00	Work Closed	

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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
69	46	Resurface Patch Repair Opening Communication Retaining wall in05 districts no of works 182	2462.62	2462.62		2462.62	2017.07	2012.40	2008.33	140 work completed & other works	
70	47	Reconstruction and improvement PC and SDBC	1360.94	1360.94		1360.94	1236.25	1236.25	1236.25	06 work in progress	
71	48	Improvement and SDBC	435.28	435.28		435.28	446.98	446.98	446.98	02 work in progress	
72	49	Reconstruction and Improvement of 18 works in purola District Uttarkashi	154.54	154.54		154.54	154.54	154.54	154.54	18 work completed	
73	50	Construction of suspension bridge Reconstruction and improvement work in District Uttarakashi/Pithoragarh/Rudraprayag/Chamoli/ Bageshwar no. of work 88	3990.63	0.00		0.00	4050.09	3027.88	2596.38	79 work in progress	
74	51	Reconstruction and improvement work in District Uttarakashi no. of work 10	236.73	0.00		0.00	236.73	236.73	236.71	10 work completed	
75	52	Construction of Suspension Bridge Reconstruction and improvement work in District Uttarakashi no. of work 19	229.47	0.00		0.00	229.47	229.47	205.16	work in progress	
76	53	Reconstruction / Improvement and Resurface work in highway no. 37 August Muni Mayali Guptkashi	396.84	0.00		0.00	396.84	396.84	389.89	work in progress	
77	54	Improvement and Damrikan work of 1 to 9 of the mori naitwar sankri motor road km 20 to sankri alternat alignment motor road of vikash khand mori	390.92	0.00		0.00	390.92	390.92	323.55	work in progress	
78	55	Improvement and Damrikan work of less than KM 1 to 26 of the mori naitwar sankri Highway No-48 Vikas Khand Mori	709.13	0.00		0.00	709.13	209.13	185.18	work in progress	
79	56	Improvement and Damrikan work of Shankri Jakhol Motor Road of Vikash Khand Mori	519.59	0.00		0.00	519.59	409.59	280.00	work in progress	
80	57	Construction of Bridge upward Govind Ghat (Chamoli)	2074.00	0.00	2074.00	2074.00	2073.64	1850.00	1850.00	work in progress	
81		Total PWD	37776.67	30000.00	2074.00	32074.00	30545.38	28268.32	26586.09		
82	6	Irrigation and Flood Control				0.00					

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6	0	1	2	3	4	5	6	7	8	9	10
83	1	Flood Protection scheme in Dharchula Block in Distt Pithoragarh to safe guard Dharchula and Taxi Stand along the right bank of river Kali	942.18	942.18		942.18	942.18	942.18	744.71	0.368 Km Construction	
84	2	Flood Protection along Alaknanda river at Gobindghat Chamoli	1189.00	1189.00		1189.00	1189.00	1187.23	1,187.23	0.95 km Construction	
85	3	Flood Protection works along Kamal River at Purola Uttarkashi	809.65	809.65		809.65	809.65	809.65	809.65	5.190 Construction	
86	4	Flood Protection Work at Block Narayanbagar Karmprayag and Gairsain in Distt Chamoli	1095.41	1095.25		1095.25	1095.25	1079.26	932.33	2.097 km Construction	
87	5	Flood Protection Work Along Banks of Kamal Nadi Dhyora to Purola And Chadda Khadd in Block Purola District Uttarkashi	750.00	750.00		750.00	750.00	750.00	750.00	4.000 Construction	
88	6	Flood Protection Work Along Left Bank of Gori River in Bhaura Bagad and Left and right Bank of Madkaniya River in Bhaura Baggad and Devi Baggad Villages in Block Munsyari District Pithoragarh	791.05	791.05		791.05	791.05	468.95	28.13	0.030 km Construction	
89	7	Flood Protection Work Along Left Bank of River Gauri in Choribagad village in Block Dharchula District Pithoragarh	921.21	921.21		921.21	921.21	883.61	220.45	0.220 km Construction	
90	8	Flood Protection Work Left Bank of Gori River in Mori Lunti and Ghattabagad Villages in Dharchula Block District Pithoragarh	960.49	960.49		960.49	960.49	882.65	296.87	0.160 km Construction	
91	9	Flood Protection Work to Safeguard Chaka Purvi Chaka and Falati Village along the River Mandakini in Jakholi Block District Rudraprayag	979.88	979.88		979.88	979.88	979.88	924.58	1.22 km Construction	
92	10	Flood Protection work in Pokhri Block along Alaknanda River and its tributaries and in Ghat Block along river Nandakini and its tributaries District Chamoli	992.53	992.53		992.53	992.53	930.08	377.57	3.15 km Construction	
93	11	Flood Protection schemes of five villages for Lambagad Army Camp in Mana Nar Narayan Saikot Rikholi villages Dasholi block Distt. Chamoli	891.78	568.60		568.60	568.60	501.42	199.59	1.85 km Construction	
94	12	Flood Protection work at Sitapur Parking from Mandakini River	1247.80	0.00	1247.80	1247.80	1247.80	1075.02			
95	13	Flood Protection work at downstream of sitapur from mandakini & pati	648.91	0.00	648.91	648.91	684.91	671.88			

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6	0	1	2	3	4	5	6	7	8	9	10
96	14	Flood Protection work at sitapur parking from leftside of Pati Revir	138.31	0.00	138.31	138.31	138.31	127.95			
97	15	Construction & Beautification Ghat at Sitapur Parking mandakini	299.55	0.00	299.55	299.55	299.55	206.01			
98	17	Flood protection work on the Right Bank of Manadakini River at Gaurikund (Reach 0.00 to 150.00 m)	948.00	0.00	948.00	948.00	510.47	271.79			
99	18	Flood protection work on the Right Bank of Manadakini River at Gaurikund (Reach 150.00 to 300.00 m)	948.00	0.00	948.00	948.00	643.92	569.31			
100	19	Rejuvenation of Tapt Kund At Gaurikund	50.00	0.00	50.00	50.00	9.83	0.15			
101	20	Flood protection work on the Right Bank of Manadakini River at D/S of Confluence at Sonprayag (Reach 0.00 to 200.00 m)	1130.00	0.00	1130.00	1130.00	277.31	227.02			
102	21	Flood protection work on the Right Bank of Manadakini River at D/S of Confluence at Sonprayag (Reach 200.00 to 465.00 m)	988.75	0.00	988.75	988.75	1040.99	908.49			
103	22	Proposed Ghat at Right Bank of Mandakini River at Sonprayag	375.00	0.00	375.00	375.00	182.58	50.95			
104	23	Clearance of River current by removing big boulders/Elephant Size boulder, Removal of Notch on left Bank L.S.	15.00	0.00	15.00	15.00	32.96	11.52			
105	24	Flood Protection Work on the Right Bank of Mandakini River at Sonparyag D/S of Hard Rock (Reach 0.00 to 200.00 m)	1130.00	0.00	1130.00	1130.00	754.04	675.50			
106	25	Flood Protection Work at Left Wing of Mandakini River in Shri kedarnath Dham	5676.56	0.00	5176.56	5176.56	5176.56	5176.56			
107	26	Flood Protection work at Didasari village left wing of Bhagirathi River in Bhatwari Village Dis. Uttarkashi	450.55	0.00	0.00	0.00	450.55				
108	27	Flood Protection work of Bustara Toak at river bank of Pinder river in Block Dewal, District Chamoli	244.98	0.00	0.00	0.00	244.98				
109	28	Renovation of Aser Simali Canal at Narainbagar Block in District Chamoli	67.00	0.00	0.00	0.00	67.00				
110	29	Construction of Kolpuri Tank Canal at Tharali Block in District Chamoli	123.85	0.00	0.00	0.00	123.85				
111	30	Renovation & Strengthening of 5 Hill Canals at Dewal Block in District Chamoli	170.33	0.00	0.00	0.00	170.33				
112	31	Flood Protection and other Infrastrcture Facilities on the Conflict of Alakananda and Mandakani River	55.26		55.26	55.26	55.26				

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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
113		Total Irrigation	25031.03	9999.84	13151.14	23150.98	22111.04	19387.06	6471.11		
114	7	Energy				0.00					
115	A	Uttarakhand Power Corporation LTD				0.00					
116	1	Construction of 33 KV substation at Agastmuni 1x5 MVA and associated 33 KV and 11 KV lines	175.00	175.00		175.00	175.00	175.00	175.00	work completed	
117	2	Shifting of 33 KV Substation at Ukhimath and construction of associated 33 KV and 11 KV line	198.00	198.00		198.00	198.00	198.00	198.00	work completed	
118	3	Construction of 33 KV Substation at Gangori 2x3 MVA and associated 33 KV and 11 KV lines	196.00	196.00		196.00	196.00	196.00	196.00	work completed	
119	4	Construction of 33 KV Substation at Sayanachatti 2x3 MVA and associated 33 KV and 11 KV lines	188.00	188.00		188.00	188.00	188.00	188.00	work completed	
120	5	Installation of additional 5 MVA transformer at 33 KV substation Pokhari	70.00	70.00		70.00	70.00	70.00	70.00	work completed	
121	6	Installation of additional 3 MVA transformer at 33 KV substation Deval	50.00	50.00		50.00	50.00	50.00	50.00	work completed	
122	7	Construction of 33 KV substation at Tawaghat 1x3 MVA and associated 33 KV and 11 KV lines	234.76	234.76		234.76	234.76	234.76	234.76	work completed	
123	8	Strengthening and Renovation of distribution system to connect areas in Dharchula Block to the UPCL grid which are presently being fed by small hydro projects of UREDA and UJVN Ltd	499.63	499.63		499.63	496.32	496.32	496.32	work completed	
124	9	Releasing service connections in areas in Dharchula block to the UPCL grid which are presently being fed by small hydro projects of UREDA and UJVN Ltd	83.65	83.65		83.65	83.65	83.65	83.65	work completed	
125	10	Strengthning and Renovation of distribution system to connect areas in Munsyari Block to the UPCL grid which are presently being fed by small hydro projects of UREDA and UJVN Ltd	194.10	194.10		194.10	194.10	194.10	194.10	work completed	
126	11	Replacement of 3 MVA transformer by 5 MVA transformer at 33 KV sub station Garur	40.00	40.00		40.00	40.00	40.00	40.00	work completed	
127	12	Construction of assocaited 11 KV lines of proposed 33 KV sub station at Karmi	228.00	228.00		228.00	228.00	228.00	228.00	work completed	
128	13	Reconstruction of HT and LT lines and distribution sub stations in Distt Rudraprayag	183.46	183.46		183.46	183.46	183.46	183.46	work completed	

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6	0	1	2	3	4	5	6	7	8	9	10
129	14	Reconstruction of HT and LT lines and distribution sub stations in Distt Uttarkashi	118.49	118.49		118.49	118.49	118.49	118.49	work completed	
130	15	Construction of 33/11 KV Substation and associated 33 KV & 11 KV lines at Pandukeshwar Chamoli	250.00	0.00	250.00	250.00	241.53				
131	16	Construction of 33/11 KV Substation and associated 33 KV lines at Malla Daahpur Bageshwar	427.24	0.00	427.24	427.24	427.24				
132	17	Construction of 33/11 Substation at Sone Prayag Rudraprayag	137.13	0.00	137.13	137.13	137.13				
133	18	Construction of 33 KV and 33 KV lines & 33 Be at Soneprayag	586.22	0.00	586.22	586.22	586.22				
134	19	Provision of laying underground HT LT cable between Soneprayag and Kedarnath for providing uninterrupted power supply during yatra	2047.27	0.00	2047.27	2047.27	2047.27	0.00	0.00		
135	Total (UPCL)		5906.95	2459.09	3447.86	5906.95	5895.17	2455.78	2455.78		
136	B	<u>UJVN Limited</u>		0.00		0.00					
137	1	Urgam I (3 MW)	1279.25	1279.25		1279.25	1279.25	1279.25	1279.25	10 % work completed	
138	2	Pilangad I (2250 KW)	1173.62	1173.62		1173.62	1173.62	1173.62	1173.62	10 % work completed	
139	3	Asiganga II (4500 KW)	3195.36	3195.36		3195.36	3195.36	3195.36	3195.36		
140	4	Asiganga I (4500 KW)									
141	5	MB I (90 MW) MB I (90 MW) Additional Work								100% works completed	
142	Total (UJVNL)		5648.23	5648.23		5648.23	5648.23	5648.23	5648.23		
143	C	<u>UREDA</u>		0.00		0.00					
144	1	Preparation of 9 Nos DPR for Re construction of Small Hydro Project damaged due to disaster in June 2013	43.98	43.98		43.98	43.98	43.98	43.98	works completed	
145	2	Re construction of 11 nos under construction M H Project Damage due to disaster for Restoration of Electricity in Rural Areas	167.39	167.39		167.39	167.39	167.39	167.39	work under progress	

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6	0	1	2	3	4	5	6	7	8	9	10
146	3	Reconstruction and renovation of 04 nos Small Hydro Projects Grid Feed Damage due to Disaster	39.01	39.01		39.01	39.01	39.01	33.95	2 works completed 2 work under progress	
147	4	Reconstruction and repair of transmission ans distribution lines to restoration of electricity provide to remote village through 10 nos of grid feed microdydel projects damage due to disaster of june 2013.	48.28	48.28		48.28	48.28	48.28			
148	5	Reconstruction and renovation of 08 number small Hydro Projects Damaged due to disaster	1448.71	1448.71		1448.71	1448.71	1448.71	987.35	3 works completed. Remaining are under progress	
149	Total (UREDA)		1747.37	1747.37		1747.37	1747.37	1747.37	1232.67		
150	Total Energy		13302.55	9854.69	3447.86	13302.55	13290.77	9851.38	9336.68		
151	8	Shelter Cum Godowns Constructions-DDMA Rudraprayag				0.00					
152	1	Reconstruction of Damaged SoneprayagRambada Bridle Path with Provision of Public Utilities and construction of Mule Shelters for movement of pilgrims	700.00	700.00		700.00	700.00	694.33	694.33	work completed	
153	2	Construction of Ghat at confluence of Mandakini and Saraswati River and public convenience area including overhead shelters to provide platform for performing religious ceremonies by tourist	1010.00	1010.00		1010.00	1010.00	1008.92	1008.92	work completed	
154	3	Construction of 120 tourist pilgrim cottages	3000.00	3000.00		3000.00	2775.47	2775.47	2775.47	work completed	
155	4	Setting up of prepaid mules and Dandi Palki counters shelters for tourists	125.00	125.00		125.00	125.00	125.00	125.00	60 work complete	
156	5	construction of Police check post and X ray scanning counter shelters at Soneprayag for safe and secure movements of tourists	50.00	50.00		50.00	58.59	50.00	50.00	work in progress	
157	6	Creation of tourist Pilgrims gated tent colony at Lincholi and Kedarnath	100.00	100.00		100.00	100.00	100.00	100.00	work completed	

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6	0	1	2	3	4	5	6	7	8	9	10
158	7	Prociding & erecting (including cost of induction at kedarnath Dham) Avalanche and Debris Flow Protection System. 3.1 m (height)x3.6 m (length) steel beams connected to single anchor by universal ball joint and having wire rope panel made of 8mm dia mesh of size 300X300 mm with steel wire mesh panel attached to to crucform frame. (complete)	1200.00	1200.00		1200.00	1427.42	1200.00	1200.00		
159	8	Two/Three tier drainage system on Estern Side of Sri Kedarnath Temple	300.00	300.00		300.00	300.00	300.00	300.00		
160	9	Construction of 50 ft. Wide road from MI-26 Helipad to Kedarnath Temple	600.00	600.00		600.00	230.98	230.98	230.98		
161	10	Shopping complex with rain shelter along the road	400.00	400.00		400.00					
162	11	Reconstruction & Repairing of 05 building in the area of Sri Kedarnath Dham					197.91				
163	12	Construction of 06 Residential Buildings at Sri Kedarnath Dham					233.48				
164		Total (Shelter Cum Godowns Constructions-DDMA Rudraprayag)	7485.00	7485.00		7485.00	7158.85	6484.70	6484.70		
165	9	Tourism / DDMA-Rudraprayag Chamoli				0.00					
166	1	Multi level parking tourist reception center cum shopping complex counter	6500.00	6500.00		6500.00	6500.00	5400.00	5400.00	77 work completed	
167	2	Reconstruction of Damaged National Highway between Soneprayag and Gaurikund with Parking Facilities to facilitate movement of tourist vehicles	822.00	822.00		822.00	822.00	786.00	786.00	work completed	
168	3	Three tier protection work behind kedarnath temple to prevent loss of property during pilgrims yatra	2995.00	2995.00		2995.00	2825.26	2824.77	2824.77	90% work completed	

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6	0	1	2	3	4	5	6	7	8	9	10
169	4	Demolition of buildings and reconstruction of Kedarpuri Godown for Stores to facilitate yatra (Tirth Purohit Awas)	7000.00	7000.00		7000.00	3843.17	2188.80	2188.80	ongoing	
170	5	Construction of three bailey bridges at Kedarnath including cost of induction and launching for move of tourist to kedarnath and between kedarnath and Bhairav Temple	600.00	600.00		600.00	600.00	198.85	198.85	ongoing	
171	7	Provisioning of rain shelters and tourist kiosks along yatra route 100 units	500.00	500.00		500.00	500.00	500.00	500.00	ongoing	

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4	S.No.	Name of Projects/Schemes	Total Projects Cost	Amount Released by Govt. of India			Amount Released by State Govt.	Expenditure till date	Amount of UC's	Physical Progress	Remarks (UC's Enclosed)
5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
172	8	Construction of 180 units of Bio Digester Toilets along Yatra Route for the tourists	1000.00	1000.00		1000.00	776.01	749.54	749.54	ongoing	
173	9	Strengthening of communication network along yatra route for safety during yatra season V Sat Hand held radio sets base stations DSPT phones optical fire cable Wi Fi connectivity night vision high resolution camera	460.00	460.00		460.00	231.64	194.96	194.96	ongoing	
174	10	Setting up of pilgrim biometric registration counters for tourists including computer hard ware connectivity and infrastructure	250.00	250.00		250.00	0.00	0.00	0.00		
175	11	Setting up of medical relief posts in different places of Gaurikund Shri Kedarnath Yatra route	223.58	150.00		150.00	223.58	150.00	150.00	work in progress	
176	12	Reflective signages from Soneprayag to Kedarnath for tourists information	50.00	50.00		50.00	49.92	32.00	32.00	work in progress	
177	13	Provision of folding bridges between Soneprayag and Kedarnath for movement of Tourists	50.00	50.00		50.00	40.00	40.00	40.00	work in progress	
178	14	New approach road, bridge, protection wall & CC work at Sitapur parking	700.00	700.00		700.00					
179	15	Construction of bridled path between Kedarpuri to Garurchatti	400.00	400.00		400.00	400.00	400.00	400.00		
180	16	Construction of hospital building Nagar Panchyat office at old Ghoda padav area Kedarpuri	600.00	600.00		600.00	130.45	97.84	97.84		

	A	B	C	H	I	J	K	L	M	N	O
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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
181	17	Diverson Channel at left side of Mandakini	153.73	153.73		153.73	76.87	30.56	30.56		

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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
182	18	Providing and laying of Cement Concrete Kharanja and improvement of Ghoda Padav Prepaid counter place at Sh. Kedarnath situated in Rudra Point of Gaurikund- Sh. Kedarnath Yatra Bridle Road in Distt. Rudraprayag				0.00	185.08	46.27	46.27		
183	19	Construction of Bridal Path, stone set, Pavement, railing, Bench at Shri Kedarnath from MI-26 to base Camp.				0.00	191.36	35.00	35.00		
184	20	Construction of 60 m bridge at Mandakini River & 36 m bridge at Saraswati River				0.00	631.01				
185	21	Flood Protection work at left bank of Mandankini River				0.00	60.78				
186	22	Reconstruction of 25 GICs & Primary School buildings				0.00	483.01				
187	23	Construction of railing, between Rambada to Shri Kedarnath bridal pathway from 83 km to 91 km for safety of tourist in Rudraprayag				0.00	297.00	222.75	222.75		
188	24	Construction of Building for Administrative Block at the Location- Gaurikund, Bheembali & Lincholi along Shri Kedarnath Yatra Bridle Road.				0.00	210.16				
189	25	Strengthening/upgradation of Satoneset RudraPoint's to Ghora Padava in Rudraprayag				0.00	88.01				
190	26	Construction of 50 Fabricated Shops at Hat Market on the right side of the road from M-26 to Sangam on Shri Kedarnath Dham bridal path and 50 km along with site development of MI-26 helipad and Kedar Dom Bhawan under the expansion of Hat Market.				0.00	408.50				
191	27	Upgradation approach Road to Bhairav Temple in Shri Kedarnath Dham				0.00	59.62				
192	28	Upgradation, expansion and repair work of road at left bank of Mandakini from Rambada to Shri Kedarnath (total 16 sub-projects)				0.00	750.00	750.00	750.00		
193	29	Construction of building for disaster management deptt at Rudraprayag					12.91				

	A	B	C	H	I	J	K	L	M	N	O
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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
194	30	Construction of 18 m span bridal steel bridge approach marg at lincholi in mandakani river shri kedarnath dham					46.30				
195	31	construction of 16m wide shri kedarnath temple path at temple campus under redevelopment and restoration of kedarpure under zone-2 central axis and approach zone					16.69				
196	32	Upgradation & necessary improvement of developed Ghoda Padav site at Gaurikund Shri Kedarnath bridle yatra route in Ukhimath					120.26				
197	33	Redevelopment reconstruction, builtyfication beehind main temple, Divya sheera & Shri Sankaracharya samadhi approach road at Shri Kedarnath					364.63				
198	34	Construction of Parking in Five Districts	1556.78	1556.78		1556.78	1556.78				
199	35	Flood Protection work at Yamnotri Dham Uttarkashi					152.92				
200	36	Flood Protection work at PG College, Augustmuni, Mansoona village from Uttarakashi Gadhera and Bheeri Dyukasari in Kusamgar					288.25				
201		Tourism / DDMA-Rudraprayag Chamoli	23861.09	23787.51		23787.51	22942.17	14647.34	14647.34		
202	10	Forest				0.00					
203	1	Naurigaon Kalsidhar Kimotra forest motor road	275.00	275.00		275.00	275.00	0.00	0.00	0.00	
204	2	Khimotra Sarutal Hanumanchatti Forest path	175.00	175.00		175.00	175.00	80.35	0.00	0.00	
205	3	Chaumasi Rambada bridle path	142.26	142.26		142.26	142.26	129.07	100.00	Constructed 5 km treck rout against 15 km	
206	4	Trijuginarayan Kedarnath forest path 24km	149.96	149.96		149.96	149.96	149.96	48.45	6 km treck root constructed against 15 km	
207	5	Gondar Madmaheshwar Rudranath forest path	100.00	100.00		100.00	100.00	100.00	0.00	0.00	

	A	B	C	H	I	J	K	L	M	N	O
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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
208	6	Ghangharia Valley of Flowers Kuntkhal Hanumanchatti	198.90	198.90		198.90	198.90	198.90	166.70	24 km Bridle path constructed	
209	7	Gangotri Gomukh Tapovan Track Marg	90.20	90.20		90.20	90.20	90.20	90.20	18 km bridle path constructed	
210	8	Bauna Kulka Jimba Balchadhura Sumdum Sobala Forest Bridle Path	300.00	100.00	200.00	300.00	300.00				
211	9	Paton to Ralam	100.00	0.00	100.00	100.00	100.00				
212	10	Reconstruction of Damaged forest roads, bridges, pony tracks etc in Upper Yamuna Division, Barkot	177.88	177.88		177.88	177.86				
213	11	Reconstruction of Damaged forest roads, bridges, pony tracks etc in Alakhnanda Soil Conservation Forest Division, Gopeshwar	21.27	21.27		21.27	21.27	21.27			
214	12	Reconstruction of Damaged forest roads, bridges, pony tracks etc in Govind Vihar Sanctuary/ National Park, Purola Uttarakashi	735.61	735.61		735.61	735.61	431.97			
215	13	Reconstruction of Damaged forest roads, bridges, pony tracks etc in Tons Forest Division	672.36	672.36		672.36	672.36				
216	14	Reconstruction of Damaged forest roads, bridges, pony tracks etc in Kedarnath Forest Division	33.50	33.50		33.50	33.50	33.50			
217	15	Bridle log Bridge at Benai/Devsu river, construction of bridle path at Osala to Kandrola, in Mori block & Bridle road at Dhatmucar to Panika in Sakar range of Govind National Park Purola (Uttarakashi)	22.27		22.27	22.27	22.27				
218	16	Log bridge at Pawani in Supin river, bridle path at Osala to Khana including log bridge, bridla path Dhatmeer to siyagar, ware cret/protection wall at chhaptoi/Panwaree bridle path at Panwaree, gharat to Rasi tataka, Log bridge at Supin river in Gangar, Log bridge at mitee in the way of Pujali to Himmari, bride path at maseri to Sakari, Bridle path at Jakholi to tataka	78.49		78.49	78.49	78.49				

	A	B	C	H	I	J	K	L	M	N	O
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5				Total Amount Release by Govt. of India (from 2013-14 to 2016-17)	Amount Diverted from DDMA Rudraprayag and Others	Grand Total (3+4)					
6	0	1	2	3	4	5	6	7	8	9	10
219	17	Bridle path at Jakhola to Dhara-Obragad, Bridge Majeegad in the way of Satta to Gwalgaon bridge path at Bhitore Kulathach, Log Bridge Liwadi-Keemu in Supin river in govind National Park of Mori & Purola (Uttarakashi)	25.04		25.04	25.04	25.04				
220	18	Mori (Nawri) Bayoli forest motor Road 01 to 20 km from Kalsidhar in Tons Forest Division Poorola(Uttarkashi)	192.01		192.01	192.01	192.01				
221	19	Wooden bridge & approach Road at Kailasyari in govind vihar wild life centuries in Purola (Uttarkashi)	4.43		4.43	4.43	4.43				
222	20	Reconstruction of Bridle path with3 Lodge Bridge at Jakholi to Gangar vide chholga Kupkhoi in Govind National Park in Purola			50.23	50.23					
223	21	Lodge Bridge at Budgar Ghandugar			4.00	4.00					
224		Total Forest	3494.18	2871.94	676.47	3548.41	3494.16	1235.22	405.35		
225	11	Animal Husbandry				0.00					
226	1	Chamoli				0.00					
227	1.1	Repairing of roof of state vet. Hospital	1.65	1.65		1.65	1.65	1.65			
228	1.2	Repairing of Boundry of non residential building of livestock centre simli	28.82	25.00		25.00	25.00	25.00			
229	2	Pithorgarh				0.00					
230	2.1	Construction of vety. Hospital khet (Dharchula)	25.38	25.00		25.00	25.00	25.00			
231	2.2	Constt. Of Boundry wall of State Poultry farm, Bin	58.12	55.00		55.00	55.00	55.00			
232		Total	113.97	106.65		106.65	106.65	106.65	0.00		
233		Grand Total	118655.51	91696.63	19349.47	111046.10	106867.11	86778.26	70728.86		

Appendix V

**Q-31015/1/2013-SP-N
Government of India
Planning Commission
(State Plans Division)**

Yojana Bhavan, Sansad Marg,
New Delhi-110001

Dated: - 23rd January, 2014

OFFICE MEMORANDUM

Subject: Assistance to the State of Uttarakhand for Medium and Long Term Reconstruction Package

1. Consequent to the June, 2013 disaster in Uttarakhand, largely affecting five districts of Pithoragarh, Bageshwar, Chamoli, Uttarakashi and Rudraprayag, and request of the State Government, the Government of India has approved a medium and long term reconstruction package to assist the State. The package includes the following assistance from the Government of India:

1.1. **Specific relaxations in guidelines of Centrally Sponsored Schemes (CSSs):** Specific relaxations in the existing guidelines of CSS, which would be applicable in all the disaster affected areas in the entire State of Uttarakhand, and will be valid till 31.3.2016, as approved are listed at **Annexure-I**.

1.2. **Assistance under Centrally Sponsored Schemes (CSSs):** Concerned Central Ministries shall earmark Central outlays under respective CSS for an amount aggregating to Rs.1884.92 crore during Financial Years 2013-14, 2014-15 and 2015-16 as per the details at **Annexure-II**. The approved funds under CSS would be provided within the overall budgetary allocation of the respective Ministries/Departments for the 12th Five Year Plan. Concerned Central Ministries shall not seek any additional budgetary allocation on account of the Uttarakhand package.

1.3. **Assistance under Central Sector:** The Department of Science and Technology will sanction an amount of Rs.50 crore under its Central Sector Plan Scheme(s) during the next two financial years (2014-15, 2015-16) within its overall budgetary allocation for the 12th Five Year Plan for the establishment of “Environment Research and Training Centre at Dehradun”. This centre shall, among others, holistically study the various environmental parameters affecting the State and shall advise the State Government on an environmentally sustainable model of development.

1.4. **Additional assistance under Special Plan Assistance (SPA):** Additional assistance for reconstruction to the State of Uttarakhand under State Plan as SPA of Rs.1100 crore shall be allocated to Uttarakhand during 2013-14, 2014-15 and 2015-16. This SPA would be release to the State as 100% central grant, in relaxation of the norm requiring 10% State contribution. An outline of the reconstruction works proposed by the State Government is at Annexure-III. These projects shall be restricted to five disaster affected districts. The year wise phasing of SPA (Reconstruction) of Rs.1100 crore to Uttarakhand is as under:

(Rs. in crore)

Source	2013-14	2014-15	2015-16	Total
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SPA (Reconstruction)	165.00	495.00	440.00	1100.00
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2. Outcomes: The State Government of Uttarakhand shall achieve the select human development and economic inclusion indicators of the 12th Plan in each of the five disaster affected districts by the end of the reconstruction period i.e. by 31.3.2016. Targets on ten core outcome indicators of the 12th Plan document (Annexure-IV) would be finalized by the Planning Commission in consultation with the State Government.

Encls: As above

Yours faithfully,

(J. K. Sharma)
Dy. Adviser (SP-N)
Tel: 23042487

To

1. Secretary, Department of Expenditure, North Block, New Delhi – 110001
2. Secretary, Department of Economic Affairs, North Block, New Delhi – 110001
3. Secretary, Department of Rural Development, Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi – 110001
4. Secretary, Ministry of Water Resources, Room No. 412, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001.
5. Secretary, Department of School Education and Literacy Shastri Bhawan, New Delhi – 110001
6. Secretary, Department of Health & Family Welfare, Nirman Bhawan, C-Wing, New Delhi – 110001.
7. Secretary, Ministry of Urban Development, Nirman Bhawan, C - Wing, Dr. Maulana Azad Road, New Delhi – 110011.
8. Secretary, Ministry of Housing and Urban Poverty Alleviation, Nirman Bhawan, Maulana Azad Road, New Delhi – 110011.
9. Secretary, Department of Land Resources, Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi, 110001
10. Secretary, Ministry of Women & Child Development, Shastri Bhawan, A - Wing, Dr. Rajendra Prasad Road, New Delhi – 110001
11. Secretary, Department of Science & Technology, Technology Bhavan, New Mehrauli Road, New Delhi - 110016
12. Secretary, Ministry of Environment & Forests, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi - 110003
13. Secretary, Ministry of Tourism, Transport Bhawan, Sansad Marg, New Delhi – 110001,
14. Secretary, Department of Agriculture & Cooperation, Room No: 115, Krishi Bhawan, New Delhi - 110001
15. Secretary, Department of Animal Husbandry, Dairying & Fisheries, Room No : 229, Krishi Bhawan, New Delhi – 110001
16. Secretary, Ministry of Drinking Water and Sanitation, Room No. 247, A Wing, Nirman Bhavan, New Delhi – 110001
17. Secretary, Department of Sports, C-Wing, Shastri Bhawan, New Delhi – 110001
18. Secretary, Ministry of Power, Room No.205, Shram Shakti Bhawan Rafi Marg, New Delhi – 110001
19. Secretary, Ministry of Road Transport & Highways, Transport Bhawan

- 1, Parliament Street, New Delhi-110001
20. Secretary, Ministry of Culture, C-wing, Shastri Bhawan, New Delhi – 110001
 21. Secretary, Ministry of Labour & Employment, Shram Shakti Bhawan, Rafi Marg, New Delhi-110001
 22. Secretary, Ministry of Home Affairs, North Block, New Delhi – 110001

Copy to:

1. Principal Secretary to PM, PMO
2. Additional Secretary, Cabinet Secretariat, Government of India.
3. Chief Secretary, Government of Uttarakhand.
4. PPS to DCH, Planning Commission
5. PPS to Secretary, Planning Commission
6. Heads of all divisions, Planning Commission

(J. K. Sharma)
Dy. Adviser (SP-N)
Tel: 23042487

Specific relaxations in the existing guidelines of CSS approved

(i) Accelerated Irrigation Benefit Scheme (AIBP) guidelines: The following relaxation in AIBP guidelines are considered necessary for restoring the existing schemes, to generate additional irrigation facilities in view of small landholdings which are scattered over a large area:

- a) Schemes constructed under AIBP and damaged due to natural calamities like cloud burst, heavy rainfall, landslides etc. would be allowed for reconstruction / maintenance so that the facility created once continues to be of use to the farmers.
- b) Decreasing the limit of potential creation from 10 hectare to 5 hectare for individual schemes constructed in hilly areas.
- c) Increasing the radius of cluster of schemes under AIBP from 5 to 10 km in hilly areas.

(ii) Flood Management Program (FMP): The following relaxations in FMP guidelines are necessary for effective flood control and soil conservation, to safeguard the agricultural land of farmers and also reduce out-migration of people:

- a) Limit of financing for Anti erosion / Flood Protection Schemes under FMP will be reduced from Rs.12.50 crore to Rs.7.50 crore for hilly areas.

(iii) Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA):

a) In view of the urgency and gravity of the situation, reconstruction of school buildings could be entrusted to construction agencies nominated by the State Government while construction of partially damaged buildings or restoration and strengthening or site development could remain with School Management Committee (SMC) under SSA / School Management & Development Committee (SDMC) under RMSA.

b) Under RMSA, a relaxation to the guidelines has been approved to undertake the works related to the damages of the June 14th -17th calamity as under:

- Reconstruction of additional classrooms, irrespective of classes for which they are meant is to be taken into consideration.
- A new composite building be permitted which caters to all classes. (6th to 12th)
- Construction and repair of boundary walls & protection walls be permitted.
- Restoration of playgrounds be permitted.

c) SSA allows funding under “Major Head” repairs only for schools which have been in existence for 10 years; due to the severity of this calamity some school buildings which have been constructed in last 10 years have been damaged to the extent of 70% or more and have been rendered useless. Thus, in order to restore the working of such schools and to conform to the “The Right of Children to Free and Compulsory Education (RTE) Act, 2009”, this guideline has been relaxed and SSA funds could be made available for reconstruction/restoration of schools.

(iv) Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (SABALA): Extension of this scheme to Rudraprayag and Pithoragarh districts has been approved. The scheme is already in operation in two of the other affected districts Chamoli and Uttarkashi.

(v) Indira Gandhi Matritva Sahyog Yojana (IMGSY): Extension of this scheme to the disaster affected districts of Uttarkashi, Chamoli, Rudraprayag, and Pithoragarh has been approved.

Annexure-II

Sectoral details of assistance under CSS for Uttarakhand during 2013-14, 2014-15 and 2015-16 FYs.

SN.	Ministry / Department	Name of CSS (Sharing pattern::Centre:State)	Demand for CSS (Reconst.)	Phasing of Total Requirement			Central Share
				2013-14	2014-15	2015-16	
1	Ministry of Water Resources	Accelerated Irrigation Benefit Program (AIBP) & Flood Control (90:10)	879.50	107.00	400.00	372.50	791.55
		AIBP (MI) (90:10)	60.71	60.71	0.00	0.00	54.64
2	Ministry of Urban Development/	Jawaharlal Nehru National Urban Renewal Mission (JNNURM) (80:20)	326.19	32.63	146.78	146.78	260.95
		Rajiv Awas Yojana (RAY) (90:10)	72.50	7.30	32.60	32.60	65.25
3	Ministry of HUPA	National Urban Livelihood Mission (NULM) (90:10)	17.50	1.76	7.87	7.87	15.75
4	Department of Rural Development	National Rural Employment Guarantee Scheme (MGNREGA) (90:10)	250.00	250.00	0.00	0.00	225.00
		Indira Awaas Yojana (IAY) 75:25	37.50	37.50	0.00	0.00	28.13
5	Department of Land Resources	Integrated Watershed Management Programme (90:10)	150.00	4.30	55.30	90.40	135.00
6	Ministry of Home Affairs	Border Area Development Programme (BADP) (100:0)	10.86	2.00	4.86	4.00	10.86
7	Ministry of Tourism	Product Infrastructure Development for Destinations and Circuits (100:0)	102.40	12.40	45.00	45.00	102.40
8	Ministry of Health & Family Welfare	National Rural Health Mission (NRHM) (90:10)	123.40	29.65	31.91	61.84	111.06
9	Department of School Education & Literacy	Mid Day Meal (MDM) (75:25)	0.69	0.69	0.00	0.00	0.52
		Sarva Shiksha Abhiyan (SSA) (65:35)	37.38	12.53	24.85	0.00	24.30
		Rashtriya Madhyamik Siksha Abhijan (RMSA) (75:25)	15.09	0.00	15.09	0.00	11.32
10	Ministry of Drinking Water & Sanitation	National Rural Drinking Water Programme (NRDWP) Calamity component (100:0)	20.00	20.00	0.00	0.00	20.00
11	Department of Animal Husbandry, Dairying & Fisheries	National Livestock Management Programme (100:0)	4.73	2.36	2.37	0.00	4.73
		National Plan for Dairy Development (100:0)	2.12	1.11	1.01	0.00	2.12
12	Department of Sports	Panchyat Yuva Krida Aur Khel Abhiyan (PYKKA) (75:25)	1.31	1.31			0.98
13	Ministry of Women & Child Development	ICDS – Construction of Anganwadi Centres (75:25)	3.49	0.55	2.07	0.87	2.62
		Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (100:0)	0.42	0.11	0.31	0.00	0.42
		Indira Gandhi Matritava Sahyog Yojana (100:0)	12.00	4.00	8.00	0.00	12.00
14	Ministry of Environment and Forests	National Ganga River Basin Authority (NGRBA) under the National River Conservation Plan (70:30)	7.62	7.62	0.00	0.00	5.33
Total			2135.41	595.53	778.02	761.86	1884.92

Outline of reconstruction works proposed to be undertaken by the State Government:

I. Road & Bridges: While reconstructing, the State Government plans to construct roads along the humps rather than along rivers, construct more tunnels across mountains and build redundancies for high trafficked stretches. While most of the requirements for reconstruction of State Highways, Major District Roads and Village Roads are being met from EAP, an amount of Rs.300 crore is approved under SPA (Reconstruction) for reconstruction & improvement of 175 kms of State Highways and Major District Roads.

II. Power & Energy: The disaster has caused extensive damages to the distribution systems across the State resulting in disruption of Power supply to about 3758 villages and hamlets. As per the survey of the State Government a total of 13 Commissioned/Operational small, medium & large Hydro Electric Projects maintained by Uttaranchal Jal Vidyut Nigam Limited (UJVNL) having an installed capacity of 553.85 MW were severely damaged. Against a demand of Rs.80 crore, SPA of Rs.32.4 crore is approved to part meet the cost of Reconstruction of UJVNL projects.

For the Re-construction of HT and LT lines and distribution substations, construction of 33/11 KV substation and installation of additional power transformer to rehabilitate the distribution network and connecting power supply of 109 nos. villages of district Pithoragarh and Bageshwar to UPCL grid, previously fed by Small hydro projects of UJVNL Ltd. and UREDA, the State has proposed an amount of Rs.54.19 crore of which an SPA of Rs.50 crore is approved.

Further, 46 SHP under Uttarakhand Renewable Energy Development Agency (UREDA) were damaged and affected power supply to 126 villages and hamlets. The State has proposed an amount of Rs.17.6 crore to restore these SHPs which is approved.

Against a total demand of Rs.151.8 crore, SPA of Rs.100 crore is approved for power & Energy. Since the power utilities are commercial entities, the balance can be mobilized from market sources.

III. Agriculture & Allied activities:

Agriculture: The total crop area affected in the five severely affected districts as reported by the State Government is 2,010 ha, whereas 1,206 ha of lands have been completely washed away. The total land area silted has been reported to be 944 ha. Based on the above losses the State has requested for an SPA (reconstruction) of Rs.14 crore for restoration of agricultural lands washed by floods, soil conservation activities etc. which has been approved.

Animal Husbandry: Floods and landslides have caused significant impacts on livestock in Uttarakhand and seem to have serious impact on the food security of the affected households. The reported number of livestock deaths in the State as on July, 2013 exceeded 17,700. The total number of animals deaths in five severely affected districts, reported by the State as of July, 2013 is 11,047 and the estimated value of the animals dead is Rs.14.40 crore besides the recurring loss of their produce. The production losses associated with the livestock damage are significant. During the current disaster 15 veterinary hospitals and 11 veterinary dispensaries have been either totally or partially damaged. The State has proposed an amount of Rs.15 crore under SPA (Reconstruction) which includes procurement of various vaccines, cattle feed, mineral

supplements, medicines etc. which has been approved.

Fisheries: Due to the disaster, the fisheries activities in Chamoli, Uttarkashi, Rudraprayag, Bageshwar and Pithoragarh districts have been severely affected. Departmental fish farms in the districts Chamoli and Uttarkashi and fish farm at Gangori in Uttarkashi district have been severely affected. This farm bred more than 200,000 fish fingerlings every year with most of the farmers in this region dependent on the farm for their fish fingerlings needs. To revive and rejuvenate the entire Fisheries Sector, the State has proposed an SPA (Reconstruction) of Rs.2 crore.

IV. Forests and Environment: Some forest areas, including tree cover, grasslands and high altitude pastures have been washed away and there are intermittent losses to forest patches in the worst-hit districts of Uttarakhand. Estimates shared by the Forest Department indicate a loss of forest area of about 80 Ha along river courses. Almost 1000 km length of forest road (inside forests) and about 2500 km of bridle paths are reported to be damaged that require urgent reconstruction. Several residential and office buildings/structures (about 200), log bridges, other temporary bridges and culverts (totaling about 76), soil and moisture conservation structures like check dams, retaining walls, gully plugs, river training works, etc. and nurseries (63 Ha) and plantations (247 Ha), have been damaged and need to be reconstructed and/or repaired urgently. The State has requested for an SPA (Reconstruction) of Rs.54 crore for Forest & Environment Sector which has been approved.

V. Shelter cum Godowns Construction: The State Government has proposed the construction of “Shelter cum Godowns Construction at certain strategic locations of remote hilly districts. The basic objective behind constructing these shelters is to provide space for local population to be shifted during natural calamities especially in hilly districts where communication lines are generally disrupted during rains and it becomes difficult to provide relief to the stranded populace. These shelters will not only have space for housing the stranded people but also for storing food grains which can be utilized by local administration during natural calamities for feeding the populace till communication lines like roads etc. are restored. For this purpose the total demand is Rs.75 crore under SPA (Reconstruction) which has been approved.

VI. Technical Education: To bring the livelihood of the people back to normal at the earliest it is proposed to train the youth of Uttarakhand in alternative means of livelihood which can work as substitute or supplement their current occupations. In this regard State has proposed an SPA (Reconstruction) of Rs.50 crore for strengthening of ITI and Polytechnics across each development block which has been approved.

VII. Irrigation including Minor Irrigation: The disaster has damaged 495 km length of canal works out of the total length of 11,702 km in the State. In the five affected districts, the total damage to the canal and flood protection work is 205 km and 25 km respectively. The total command area in the State under irrigation is 333,800 ha and due to the damages sustained by the irrigation infrastructure, 38,330 ha have been affected in the State. Against a demand of Rs.250 crore, Rs.100 crore approved under SPA (Reconstruction), as the State can avail assistance under AIBP once its request for relaxation of norms is considered.

IX. Tourism: The region of the disaster includes the holy pilgrimage circuit of the *CharDham Yatra* (Badrinath, Kedarnath, Yamnotri, Gangotri and Kailash Mansarover Yatra route). The road connectivity to these places has been the worst affected. Shri Kedarnathji Shrine Area in District Rudraprayag is the epicenter of disaster and witnessed maximum damages. This included not only the Temple, Township around Kedarnath temple but also the towns along the approach

route Shrine area viz. Ramabara and Gaurikund. Besides the physical damages, the disaster has also severely affected the livelihood of the people dependent solely on the flow of pilgrims and tourists. The State is now developing a framework for promoting climatically resilient tourism. Existing infrastructure of helipads will be strengthened and new helipads, ropeways and other supporting structures and multi-purpose shelters are proposed to be constructed using concepts of “BUILD BACK SMARTER and SAFER” by feasible site selections and using superior eco-friendly technologies. Village and community based tourism is proposed to be promoted to reduce the need for huge investment on hotels etc. The State Government has proposed an amount of Rs.200 crore for the Reconstruction and Restoration of Kedarnath Township, Rs.100 crore for reconstruction & development of dhams viz: Yamnoutri, Gangotri, Badrinath, Hemkundsahib and Kailash Mansasrover, Rs.100 crore for constructing ropeway between Gaurikund and Kedarnath as an alternative mode of transport and Rs.50 crore for restoration of Kedarnath Shrine as well as other temples in its vicinity like Sankrcharaya Samadhi, Bahironath Temple etc with the technical assistance of ASI. In total the State has proposed an amount of Rs.450 crore, of which Rs.380.09 crore is approved under SPA (Reconstruction) for Tourism sector, the balance can be contributed by the State from its own resources.

X. Women Empowerment & Child Development: The State Government has proposed a special package of Rs.25.82 crore with a focus on life-cycle approach to address the specific issues of children, adolescent girls and women in calamity ravaged areas. Out of this, Rs.9.91 crore has been approved under SPA (Reconstruction) for Sustainable Livelihood of women & adolescent girls for vocational training, setting up of 2 textile production units and under Cure Project through which specific needs of women will be addressed by providing them solar lights, health & hygiene kits, hybrid seeds kits, agricultural tools etc. State's request for relaxation in the current norm under ICDS for construction of Anganwadi centres requiring 25% State contribution involving an outlay of Rs.0.87 crore has not been agreed to. Instead, State may bear the State share.

Sectoral details of Special Plan Assistance (Reconstruction) for Uttarakhand for Medium and Long Term Reconstruction Package during the FY 2013-14 to 2015-16

(Rs. in crore)

S. N.	Sector	Approved SPA
1	Roads & Bridges	300.00
2	Energy	100.00
3	Agriculture & Allied	85.00
	<i>Out of which-</i>	14.00
	i) Agriculture and soil conservation	
	iii) Animal Husbandry	15.00
	v) Fisheries	2.00
	vi) Forests and Environment	54.00
4	Shelter cum Godowns Construction	75.00
5	Technical Education	50.00
6	Irrigation	100.00
7	Tourism	380.09
8	Women Empowerment & Child Development	9.91
Total		1100.00

Core outcome indicators of the 12th Plan

Health:

- i. Infant Mortality Rate
- ii. Maternal Mortality Ratio
- iii. Children under 3 year under-nourished

Education:

- iv. Mean Years of Schooling
- v. Gender Gap in School Enrollment

Infrastructure, Including Rural Infrastructure:

- vi. Percent of Rural Population with access to Improved Source of Water
- vii. Gross Irrigated Area as a Percent of Gross cropped area
- viii. Rural Tele-Density

Environment and Sustainability:

- ix. Percent of green cover from satellite imagery to total land mass

Service Delivery:

- x. Percent of Households with access to banking services

	A	B	C	D	E	F	G	H	I
1	Appendix VI Details of Hazard resilient Roads built or retrofit under UDRP								
2	PIU-R & B Roads								
3	Sl. No.		Name of Asset	District	Block/Village (No. of village benifited)	Category (NH, SH, MDR, ODR, VR)	Length (in KM)	Project Cost (in Lacs)	Population served (in nos.)
4	1	1	Nainipatal Madmaley MR (Ch-7 to 13.162 Km)	Askot	1	VR	6.16	270.39	640
5	2	2	Acholi Badabe MR		5	VR	10.00	94.46	3,008
6	3	3	Acholi jaakh		5	VR	8.00	331.29	3,319
7	4	4	Badabe Seligya MR		2	VR	9.50	410.14	314
8	5	5	Badari kante Bora MR		5	VR	6.00	482.84	557
9	6	6	Baluwakot Paiya-Pori MR		2	VR	9.40	596.7	7,261
10	7	7	Jhulaghat Talesur MR		3	VR	5.00	400.82	850
11	8	8	Madmalne Bhotad MR		2	VR	3.25	279.96	1,062
12	9	9	Madmanya katpatia MR		5	VR	10.00	697.53	2,154
13	10	10	Ogla Pathak Gaon narath-Bhagichauri MR		4	VR	12.50	537.79	349
14	11	11	jaakh meladungari		1	VR	7.00	337.28	742
15	Total Sub Projects: 11								
16	12	1	Chamkhala-Querala-Dabhra MR	Bageshwar	9	ODR	6.00	329.59	2,429
17	13	2	Marchula Syalde Deghat MR		13	ODR	44.60	1421.7	2,844
18	14	3	Pasiya-Pipna MR		9	ODR	15.00	1421.7	2,473
19	15	4	Dhora-Ratankhan Motor Road		3	VR	5.85	351.24	752
20	16	5	Khunt -Almora Road		5	VR	11.50	124.63	1,955
21	17	6	Vishnath-Jaskot Road		6	VR	8.00	432.6	1,291
22	18	7	Bageshwar-Girichhina MR		3	ODR	13.40	1014.6	663
23	19	8	Dyangan-Kathyatbara-Aare bypass MR		4	ODR	5.40	585.88	4,800
24	20	9	Kanda-Saniudiay-Rawatsera MR		9	ODR	20.00	1242.49	2,841
25	21	10	Bhyun- Gadera Motor Road		2	VR	7.00	514.16	475
26	22	11	Bhyun- Guler Motor Road		1	VR	5.00	315.43	429
27	23	12	Dhlam Khunoli Motor Road		3	VR	8.00	369.85	762
28	24	13	Harinagri-Kulau-Gwaldam MR		9	VR	17.00	956.1	4,673
29	25	14	Kameridevi Syakot Motor road		4	VR	9.50	256.75	914
30	26	15	kanda- Mantoli MR		4	VR	5.00	305.87	771
31	27	16	Kapkot- Tehsil-Poling MR Phase I		3	VR	5.25	428.93	3,318
32	28	17	Pothing To Pothing Bhotora Motor Road		4	VR	3.00	175.27	3,335
33	29	18	Vijaypur Dhaptri Bastoli Motor Road		1	VR	6.00	300.55	530
34	30	19	Chaufala Mate Tilsari MR		3	VR	6.00	476.19	1,314

	A	B	C	D	E	F	G	H	I
35	31	20	Dakghar Simghari MR		3	VR	2.56	221.95	1,721
36	32	21	Okadal Ana Loharchora Gairlaikh		4	VR	6.00	451.88	827
37	33	22	Kandhar Reetha Talla Parkoti Sirkot Patharkhani MR		3	VR	6.00	448.58	1,696
38	34	23	Dyuni Sukanda MR		4	VR	5.00	489.24	4,163
39	35	24	Aso Bedapakhar Okhaldhar MR		3	VR	6.30	482.56	1,418
40	36	25	Kapkot- Tehsil-Poling MR Phase2		4	VR	5.25	428.93	657

	A	B	C	D	E	F	G	H	I
41	37	26	Katpudiya Chhina Seraghat MR (Ch-0 to 13 Km)		4	VR	13.00	1095.89	2,966
42	38	27	Okadi Ana Lohar Chada Gairlekh MR Phase2 (Ch-6 to 12)		3	VR	6.00	565.24	905
43	Total Sub Projects: 27								
44	39	1	Thano Bhogpur Road	Chakrata	3	VR	1.00	50.11	3,493
45	40	2	Anu-Chilhar Upper-lower		2	VR	5.75	389.77	832
46	41	3	Basantpur Madsi Motor Road		1	VR	5.00	144.76	240
47	42	4	Bhogpur Gadul Fagsi Motor Road		1	VR	1.75	67.16	68
48	43	5	Dharkot Tali Motor Road		1	VR	4.00	12.69	214
49	44	6	Dharkot Tangoli Badarna Motor Road		5	VR	7.00	152.61	713
50	45	7	Harrawala Nakronda Road		1	VR	4.50	131.83	11,125
51	46	8	Ichla Fatau MRoad		4	VR	6.60	389.40	964
52	47	9	Koruba Kwarana Mangrauli MR		2	VR	7.00	605.05	573
53	48	10	Kunwala to Sainik Colony Road		1	VR	1.00	19.36	976
54	49	11	Nagthat Bisoi Road		5	VR	5.50	291.29	849
55	50	12	Sahiya Patan Samalta Panuwa MR		9	VR	11.00	581.91	1,951
56	51	13	Submergence Road		11	VR	22.00	433.01	1,957
57	52	14	Suryadhar Sangaoun Motor Road		1	VR	5.50	198.83	399
58	53	15	Johari Jakhan Motor Road		2	VR	1.60	70.60	3,360
59	54	16	Bhagwanpur-Sikhroda road		2	ODR	8.00	55.00	21,628
60	55	17	Vill Dada Jalalpur to Samsaan Ghat road		1	VR	1.00	15.00	4,302
61	56	18	GT road to Jeen Moh Sahidpur road		1	VR	1.23	33.00	759
62	57	19	GT road to Lavva road		1	VR	1.50	23.00	670
63	58	20	GT road to Seesona road		1	VR	0.70	35.00	2,399
64	59	21	Hasanpur-Madanpur road		2	VR	1.65	50.23	2,454
65	60	22	Lahboli to Mannakheri road		2	VR	0.50	18.79	5,561
66	61	23	Latifpur-Khubbanpur road		1	VR	0.61	6.57	4,076
67	62	24	Makdumpur Link road		2	VR	1.50	37.81	1,682
68	63	25	Mundlana to Harjoli jatt road		2	VR	0.58	21.04	10,951
69	64	26	Nagla koyal link road		1	VR	1.50	29.06	976
70	65	27	NH road to Narsan Khurd road		1	VR	0.45	18.28	2,727
71	66	28	Rahmatpur-Belda road		1	VR	0.7	28.38	16
72	67	29	Raipur link road		1	VR	1.2	266.56	5,994
73	68	30	Ranghadwala to Nagal road		2	VR	1.07	39.00	2,290
74	Total Sub Projects: 30								
75	69	1	Anjanisain to Punanu MR		6	V.R	9.50	494.32	2,021
76	70	2	Bhaldiyana bend to Kamand MRoad		3	V.R	7.43	594.57	913
77	71	3	Chaka-Pendarsh Motor raod		3	V.R	8.85	417.14	1,190

	A	B	C	D	E	F	G	H	I
78	72	4	Dabarkhal-Kunda-Mandwa- Ranichouri Motor road		3	V.R	7.00	582.19	1,455
79	73	5	Gaja-Dandachali Motor road		6	V.R	10.00	538.31	1,343
80	74	6	Ghugti Dhunga Dhamari Maindkhal Motor road		5	V.R	8.00	32.00	1,462
81	75	7	Indra goan Katkhet Motor road		1	V.R	2.00	22.00	481
82	76	8	Jakhanidhar Garakot Paurikhal MR		13	V.R	24.50	915.44	5,480

	A	B	C	D	E	F	G	H	I
83	77	9	kamand Jawarna Motor road	Tehri	5	V.R	8.00	41.00	3,114
84	78	10	Kempti Bypass Motor Road		1	V.R	5.75	348.81	143
85	79	11	Laluri Ghiya Koti kayrda challi Motor road		1	V.R	2.75	20.00	434
86	80	12	Laluri Koti Mahoron Ki Manjkhet Motor road		2	V.R	5.00	21.00	737
87	81	13	Maindkhal Bangiyal Jawarna Motor road		9	V.R	6.00	49.00	3,813
88	82	14	Maindkhal Gair Nagun Motor road		5	V.R	6.00	43.00	1,342
89	83	15	Syansu pul to Ratwari Nakot Kholi Motor road		4	V.R	4.00	20.00	701
90	84	16	Tachla-Naour motor road		4	V.R	9.00	849.91	712
91	85	17	Uniyal goan Nagraja dhar Motor road		2	V.R	5.00	85.00	417
92	86	18	Sain Mandar MR		11	V.R	15.75	1445.35	6,368
93	Total Sub Projects: 18								
94	87	1	Laiuwapani-Banlekh Motor Road	Champawat	2	ODR	8.40	393.54	751
95	88	2	Barakot Simalkhet MR		6	VR	25.00	938.94	3,736
96	89	3	Punav-Sipty Nayari Motor Road		2	VR	8.00	429.21	305
97	90	4	Matiyal Band Upertola MR		4	VR	4.00	1165.00	1,162
98	Total Sub Projects: 04								
99	91	1	Jaurasi - Hapla - Dhotidhar MR	Gopeshwar	3	ODR	1.70	157.67	1,370
100	92	2	Salor - Dungra MR		4	ODR	6.00	293.34	3,175
101	93	3	Sonla - Kandara - Maikhura Silangi MR		13	ODR	36.00	1625.43	3,380
102	94	4	Aagerchatti Jingod Motor Road		3	VR	7.00	629.57	748
103	95	5	Bagoli Koti Motor Road		5	VR	11.20	622.60	1,637
104	96	6	Bamnath - Nail - Sankri MR		2	VR	2.35	1.78.75	579
105	97	7	Gauchar Shail Dua MR		1	VR	10.00	889.84	233
106	98	8	Ghat Baanjbagar Telan Motor Road		6	VR	8.00	474.31	3,580
107	99	9	Hapla Gudam Motor Road		3	VR	1.50	131.21	2,129
108	100	10	Lolti - Kasbinagar Motor Road		2	VR	3.52	197.54	461
109	101	11	Lolti - Malbajwad Motor Road		3	VR	6.00	373.08	2,001
110	102	12	Nanprayag Devkhal to Gurshal Motor Road		1	VR	3.25	188.78	436
111	103	13	Narayanbagar-Kaub Motor Road		3	VR	6.35	622.19	1,720
112	104	14	Pokhari - Harishanker MR		3	VR	4.80	396.73	1,153
113	105	15	Pursari Palethi Sartoli		2	VR	4.53	164.11	870
114	106	16	Sarkot Sampark Road		3	VR	5.50	615.82	2,020
115	107	17	Sema Bairaun Motor Road		5	VR	10.50	1083.32	2,758
116	108	18	Semi Bend to Siwai Motor Road		2	VR	3.00	365.62	799
117	109	19	Sarmola Motor Road		3	VR	1.40	78.18	780
118	110	20	Tharali-Junidhar Motor Road		4	VR	3.60	378.77	1,159
119	111	21	Mandal -Anusuiya-Siroli motor road		2	VR	0.90	65.1	484

	A	B	C	D	E	F	G	H	I
120	112	22	Raitoli-Nargoli-Kamiyar motor road		4	VR	1.00	66.45	1,666
121	113	23	Kanakchouri- Pokhta -Rauta motor road		3	VR	2.22	186.4	1,379
122	Total Sub Projects: 23								

	A	B	C	D	E	F	G	H	I
123	114	1	Kandai-Kamoldi-Molkhakhal Motor Road	Guptkashi	17	ODR	20.78	349	3,208
124	115	2	Nagrasu-Dhanpur-Dandakhal Motor Road		8	ODR	28.00	1183.68	2,100
125	116	3	Ukhimath Intermal motor road		1	VR	0.80	31.62	2,296
126	117	4	Raintoli-Dungra Motor Road		1	VR	3.00	189.93	676
127	118	5	Bansu-Tyuri MR		2	VR	1.50	107.03	910
128	119	6	Chandrapuri Gugli motor road		4	VR	3.55	248.21	867
129	120	7	Chhenagad Uchola Motor Road		1	VR	5.00	412.54	1,044
130	121	8	Nagjagai-Fagu MR		3	VR	4.00	238.02	2,214
131	122	9	Salya-Tulanga MR		4	VR	6.00	444.87	1,820
132	123	10	Guptkashi Bypass & Guptkashi Hospital MR		1	VR	1.75	132.26	1,130
133	124	11	Guptkashi inspection house approach MR		1	VR	0.20	19.09	1,130
134	125	12	Guptkashi-Jakhdhar MR		4	VR	6.50	277.23	2,856
135	126	13	Jakhdhar-Dewar MR		2	VR	3.00	203.94	865
136	127	14	Kamsal Jagoth motor road		4	VR	6.40	272.24	1,765
137	128	15	Kandai-Barangana Motor Road		5	VR	4.40	366.66	342
138	129	16	Khedakhal- Navasu-Hariyali Motor Road		1	VR	2.00	104.6	837
139	130	17	Khujeer bend to Chauki Barsil Motor Road		1	VR	1.00	82.65	292
140	131	18	Kotkhal jagtoli MR		5	VR	9.50	538.57	2,256
141	132	19	Kusumgarh-sursal motor road		2	VR	3.00	209.12	1,575
142	133	20	Pathali-Paldwari motor road		1	VR	2.60	210.78	580
143	134	21	Rudraprayag- gandhar- Garhidhar-dasjula MR		9		28.00	612.37	3,675
144	135	22	Silla-Bamangaon MR		2	VR	1.35	61.63	1,651
145	136	23	Sirain-Chaura- Bhatwari Motor Road		1	VR	3.00	250.13	113
146	137	24	Suryaprayag- Mussadung Motor Road		3	VR	5.50	277.63	1,220
147	138	25	Syuri-Taithi-Pata Motor Road		3	VR	5.25	400.74	586
148	139	26	Tala Sari motor road		1	VR	4.00	143.25	784
149	140	27	Ukhimath IH Approch Raod		1	VR	0.20	7.76	2,296
150	141	28	Ukhimath Mansoona MR (Uben area)		3	VR	3.00	200.57	2,935
151	142	29	Ukhimath Temple MR		1	VR	0.80	22.17	504
152	143	30	Kandai Kamoldi Molkakhal MR Phase2 (10 Km)		14	VR	10.00	918.72	2,647
153	Total Sub Projects: 30								
154	144	1	Panduwakhan Rohilda Motor Road	Karnprayag	5	ODR	15.68	496.87	3,462
155	145	2	Sunali - Dasholikhal MR		2	ODR	15.40	1091.56	322
156	146	3	Batadhar Dhunarghat Motor Road		5	VR	20.00	899.53	3,002
157	147	4	Gairsain Pajiyana Motor Road		5	VR	15.00	567.3	2,571
158	148	5	Mitiyala - Kirsal MR		1	VR	2.00	202.24	552
159	149	6	Ujjwalpur Saim Dharkot Motor Road		3	VR	2.00	60.52	1,231

	A	B	C	D	E	F	G	H	I
160	150	7	Gauchar Rano Quithi MR		4	VR	8.50	884.92	1,416
161	151	8	Kulsari Gairwaram MR		7	VR	9.00	661.61	1,779
162	Total Sub Projects: 8								
163	152	1	Didihat Dunakot	Munsiyari	4	VR	19.06	706.55	7,290
164	153	2	Charma Jaurasi Lakhatigaon		8	VR	18.85	1312.29	3,090
165	154	3	Didihat Aadichura		2	VR	8.50	332.12	7,137
166	155	4	Ganai Bankot motor road		5	VR	13.00	575.81	1,394
167	156	5	Jaiti- Baniya Gaon Motor Road		3	VR	5.50	358.17	928
168	157	6	Kqitee Sain Rathi Motor Road		4	VR	6.50	658.61	744
169	158	7	Kunalta motor road		4	VR	10.50	1220.1	1,267
170	159	8	Madanpur Nani motor road		4	VR	10.20	972.41	1,012
171	160	9	Madkot Bauna		4	VR	24.50	3429.7	2,346
172	161	10	Munsiyari Dandadhar Janti MR		3	VR	5.50	258.61	1,948
173	162	11	Shaid Pushker Singh Motor Road		1	VR	1.88	234.69	349
174	163	12	Shishu Mandir-Nanasen Motor Road		2	VR	2.75	182.38	1,427
175	Total Sub Projects: 12								
176	164	1	Chimtakhal-Bhonkhal MR	Nainital	10	ODR	31.00	1948.43	3,145
177	165	2	Jainti-Pipli-Valka Motor Road		4	VR	11.67	1490.25	695
178	166	3	Mornaulla-Jainti Motor Raod		6	VR	13.00	915.78	2,352
179	167	4	Padampuri Harakhan Kathgodam Motor Road		9	VR	30.00	1623.64	7,103
180	168	5	Talla Ramgarh Ratighat MR		3	VR	8.00	271.08	2,385
181	Total Sub Projects: 05								
182	169	1	Kotdwar-Pulinda motor road	Pauri	6	ODR	12.00	152.03	1,963
183	170	2	Pauri-maroda-bayasghat-devprayag MR		6	ODR	24.60	1029.37	605
184	171	3	Arkani-Janasu-Khandukhal MR		2	VR	5.20	298.75	185
185	172	4	Arkani-Khandukhal-Muchyali Dewal Charakot MR		4	VR	17.50	736.44	563
186	173	5	Bunga Malla Motor Road		2	VR	5.00	179.99	605
187	174	6	Byaschatti Chheitur-Bhutnisi MR		6	VR	12.00	510.77	429
188	175	7	Chamrada- Asingi- Dadini MR		3	VR	4.25	287.25	279
189	176	8	Chipalghat - Noutha - Nai Motor Road		3	VR	4.00	99.54	692
190	177	9	Diet-Chadhigaon MR		1	VR	2.50	100.59	310
191	178	10	Gangadarshan Band to NH-58 KM Motor Road		1	VR	0.50	67.78	2,141
192	179	11	Khandah- Bacheli MR		2	VR	3.50	150.7	632
193	180	12	Neelkanth Link MR		4	VR	5.00	358.32	365
194	181	13	Noudi - Badeth Motor Road		4	VR	0.40	34.57	2,581
195	182	14	Paithani - Chuthani Motor Road		3	VR	1.60	0.65	1,131
196	183	15	Pokhal-Bhawansi-mandlu motor road		11	VR	19.00	920.16	961

	A	B	C	D	E	F	G	H	I
197	184	16	Rikhanikhal- chanikhal Motor Road		5	VR	9.60	139.39	718
198	185	17	Sakarsain - Barseela - Bagadh Motor Road		2	VR	6.00	101.52	373
199	186	18	Satpulli- Dudhakhal MR		6	VR	12.00	474.94	474
200	187	19	Syoli - Teela Motor Road		4	VR	1.50	72.03	1,814
201	188	20	Uffalda-Dhelchauri MR		4	VR	7.50	326.6	2,839
202	189	21	Badiyu-jhakhanoli kunkuli MR		1	VR	10.00	416.29	64
203	190	22	Birsanikhal-Kota-Silsu-bhutnisi MR		2	VR	3.50	151.24	227
204	191	23	RamkundGhat to GIC Devprayag Link MR		2	VR	0.60	87.49	26
205	192	24	Nathukhal Pokhrikhet MR		4	VR	7.00	282.13	505
206	193	25	Kasyali Khobra MR		5	VR	8.00	424.47	819
207	194	26	Dadmandi Madanpur MR		2	VR	5.00	262.25	204
208	195	27	Pahargaon Bandur MR	3	VR	6.00	390.46	783	
209	Total Sub Projects: 27								
210	196	1	Chinyalisaur-Jogath Motor road	Uttarkashi	12	V.R	20.00	1398.72	6,466
211	197	2	Barethi Kanwa Motor road		2	V.R	2.00	49.63	2,145
212	198	3	Barnali Jhotari Motor Road		4	V.R	9.05	669.46	845
213	199	4	Bhadrasu Ramalgaon Motor Road		1	V.R	2.77	235.23	67
214	200	5	Bhatwari-Barsu Motor Road		3	V.R	2.25	314.91	1,149
215	201	6	Bhukki Kujjan Tihaar Motor Road		3	V.R	5.00	176.64	1,760
216	202	7	Chadethi-Raitha Motor Road		4	V.R	2.03	351.89	1,849
217	203	8	Ranari to Danda Majaf MR		2	V.R	4.60	376.32	670
218	204	9	Gadh-Dewal molthat motor road		2	V.R	3.85	339.22	440
219	205	10	Dhanari Motor road to Pujargaon Motor road		1	V.R	3.10	182.65	69
220	206	11	Diyari setwade motor road		4	V.R	5.00	4.95	1,864
221	207	12	Dunda Kurha Motor road Phase1		1	V.R	0.75	45.74	7
222	208	13	From Gangotri NH to ITBP Motor road		1	V.R	0.82	15.55	3,194
223	209	14	Gagnani Motor Pull to Bhangeli Motor Road		1	V.R	4.60	474.13	274
224	210	15	Garh Ambedkar motor road		1	V.R	4.00	25.54	332
225	211	16	Nakuri Singoth Motor road		3	V.R	6.00	35.3	1,629
226	212	17	Naugoan Suri Motor road		10	V.R	7.00	112.41	2,936
227	213	18	Newgaon Sari Shrikalkhal Motor road phase1		6	V.R	10.00	37.36	2,537
228	214	19	Pipli to gawana Motor road		3	V.R	2.90	179.94	1,515
229	215	20	Saura Sari Motor Road		2	V.R	1.75	257.07	955
230	216	21	Paleta Khansi Motor Road		1	V.R	3.00	257.15	326
231	217	22	Dunda Kurah Motor road Phase2		1	V.R	2.00	53.91	7
232	218	23	Newgaon Sari Shrikalkhal Motor road phase 2		6	V.R	10.00	629.57	2,537
233	Total Sub Projects: 23								

Details of Hazard resilient Bridges built or retrofit under UDRP

Sl.No.	District	Tehsil/Block/Village (No. of village benifited)	Name of Bridge	Category (Motor, Foot, Bridle, Suspended, Simply Supported)	Span (m)	Project Cost (in INR)	Population served (in nos.)
1	Chamoli	1	Aarudi- Paturdi	Suspension	140.00	1243.00	609.00
2	Chamoli	4	Chepado	Suspension	120.00	1073.00	1548.00
3	Uttarkashi	2	Didsari	Suspension	100.00	994.00	958.00
4	Rudraprayag		Construction of two lane 70 R Bridge 60 m span km.70 on Sonprayag Kedarnath road.	ACROW	60.00	790.00	
5	Chamoli	2	Jokhna Laga Bura	Suspension	70.00	724.00	1389.00
6	Uttarkashi	1	Naluna	Suspension	120.00	904.00	475.00
7	Chamoli	1	Kalpeshwar on Helang-Urgam-Kalkeshuar Bridle Road	Suspension	80.00	557.00	1549.00
8	Chamoli	1	Benakuli Khiro	Truss	45.00	273.00	90.00
9	Haridwar	2	Box type culvert 30 meter length with 0.650 Km approach road near Bichpali in Akuda Khurd Connecting Akudha Khurd to Ismailpur on Pathari river in Vidhan Sabha Lakshar	Box culvert	30.00	224.94	3340.00
10	Haridwar	2	2 Box type culvert 27.60 meter and 18.80 meter length with 0.40 Km approach road near village Sindhadu to connect Anthal Bujurg village on Pathari road Vidhan Sabha Lakshar	Box culvert	27.60	352.60	6959.00
					18.80		
11	Haridwar	3	Box type culvert 50 meter length with 0.40 Km approach road near village Tingri on Pathari river in Vidhan Sabha Lakshar	Box culvert	50.00	256.06	6741.00
12	Rudraprayag	4	Ratura	Suspension	80.00	562.00	2347.00
13	Pithoragarh	1	Over Dholi river at Sela	Suspension	100.00	926.00	25.00
14	Pithoragarh	1	Over Dholi river at Chal	Suspension	120.00	747.00	220.00
15	Pithoragarh	4	Nisni	Suspension	90.00	607.00	1736.00
16	Rudraprayag	1	Kotma Chilon	Truss	70.00	625.00	353.00
17	Rudraprayag	1	Ruch Mahadev Kotimaheshwar Mandir	Truss	70.00	898.00	270.00
18	Rudraprayag	1	Triveni Sangam	Truss	45.00	478.00	561.00
19	Chamoli	2	Boraghad	Suspension	100.00	990.00	649.00
20	Chamoli	4	Narayanbagar	Suspension	90.00	853.00	1294.00
21	Uttarkashi	1	Pandradhu	Truss	60.00	458.00	563.00
22	Uttarkashi	1	Indrawati	Suspension	80.00	394.00	271.00
23	Tehri	6	Gaind-Chamasari	Truss	60.00	672.00	1700.00
24	Haridwar	4	Gadmirpur-Aurangabadh Motor Road	Box culvert	30.00	227.00	21589.00
25	Pithoragarh	2	Over Dholi river at Khela Darma Bridle Road at Boan	Truss	70.00	427.00	628.00
26	Pithoragarh	2	Lithing Kot	Truss	70.00	359.00	4615.00

Appendix VII

Details of Public Buildings built and retrofit under UDRP by PIU-PB

Sno.	Name of Asset	District	Tehsil/Block/ Village	Name of Asset/Project	Category (School, Hospital, Hostel, Police Station, Fire Control, SDRF)	New or Retrofit	Project Cost (in Cr.)	Population served (In Lacs)	Remarks (If any)
1	2	3	4	5	6	7	8	9	10
1	Building	Rudraprayag	Augustmuni	Primary School, Gandhari	School	New Construction	0.8059	2.42	The figure of 2.42 was taken assuming that Fire Station Ratura & PG College, Agustmuni (It is the only PG college in the entire district) will benefit the entire district of Rudraparyag
2	Building		Augustmuni	Primary School, Chopta	School	New Construction	0.8379		
3	Building		Augustmuni	Primary School, Barsu	School	New Construction	0.5959		
4	Building		Augustmuni	Primary School, Kottalla	School	New Construction	0.5362		
5	Building		Jakholi	Primary School, Timili Badma	School	New Construction	0.5882		
6	Building		Jakholi	Primary School, Panjana	School	New Construction	0.5553		
7	Building		Ukhimath	Primary School, Kaviltha	School	New Construction	0.6655		
8	Building		Ukhimath	Govt. Inter College, Parkandi	School	New Construction	4.3724		
9	Building		Ukhimath	Govt. Inter College, Ghimtoli	School	New Construction	3.7905		
10	Building		Augustmuni	Govt. Inter College, Kotgi	School	New Construction	4.1998		
11	Building		Augustmuni	Govt. Inter College, Peeradhanpur	School	New Construction	4.1333		
12	Building		Augustmuni	Govt. P.G College, Augustmuni	Hostel	New Construction	3.7355		
13	Building		Augustmuni	Fire Station, Ratura	Fire Control Station	New Construction	6.3458		
14	Building	Pauri Garhwal	Srinagar	Food godown, srinagar	Food Godown	New Construction	3.4456	6.87	The figure of 6.87 was taken assuming that Food Godown Srinagar & Ladies Police Station Srinagar are the only of their type in the entire district and will benefit the entire district of Pauri
15	Building			Ladies Police Station, Srinagar	Police Station	New Construction	9.6262		
16	Building			Commanding Officer Office	Police Station	New Construction			
17	Building			Fire Station	Fire Control Station	New Construction			
18	Building	Pithoragarh	Dharchula	Health Sub- Centre, Baluwakot	Hospital	New Construction	1.609	0.05	
19	Building	Chamoli	Joshimath	Police Station, Lambagad	Police Station	New Construction	4.6062	0.02	
20	Building		Joshimath	State Allopathic Dispensary, Pandukeshwar	Hospital	New Construction	5.2022		
21	Building	Bageshwar	Kapkot	Primary School, Kuwari	School	New Construction	3.7266	0.003	
22	Building			Anganwadi, Kuwari	School	New Construction			
23	Building			Community Centre, Kuwari	Community Centre	New Construction			
24	Building			Health Sub-Centre at Kuwari	Hospital	New Construction			
25	Building		Augustmuni	Retrofitting work of existing building of Govt. Inter College, Peeradhanpur	School	Retrofit	0.2084		

26	Building	Rudraparyag	Augustmuni	Retrofitting work of existing building of Govt. Inter College, Kotgi	School	Retrofit	0.3632	2.42	
27	Building		Augustmuni	Retrofitting work of existing building of Primary School, Kottalla	School	Retrofit			
28	Building		Ukhimath	Retrofitting work of existing building of GIC, Ghimtoli	School	Retrofit	0.5465		
29	Building		Jakholi	Retrofitting work of existing building of primary School, Panjana	School	Retrofit			
30	Building		Jakholi	Retrofitting work of existing building of primary School, Timli badma	School	Retrofit			
					Total Project Cost (In Cr.):		60.4961		

Sno.	Name of Asset	District	Tehsil Block	Name of Asset/Project	Category	New or Retrofit	Project Cost (in Cr.)	No. served (In Lacs)	Remarks (If any)
1	2	3	4	5	6	7	8	9	10
1	Building	Dehradun	Doiwala	SDRF Battalion HQ cum Training Centre at Jollygrant, Dehradun	SDRF	New	93.18	100.1	It is the only Battalion HQ cum Training Centre for SDRF in the entire state.
2	Building	Dehradun	Raipur	USDMA Building at IT Park, Dehradun	Government	New	70.84	100.1	It is the major Uttarakhand State Disaster Management Authority Building in the
3		Dehradun	Doiwala	Passive IT Networking at SDRF Campus	SDRF	New	0.22	100.1	It is the only Battalion HQ cum Training Centre for SDRF in the entire state.
Total Cost (In Cr.):							172.24		

Appendix VIII Details of Technical Assistance and Capacity Building under UDRP						
Sno.	Name of Study	Districts Covered	Tehsil/Block/Village	Category (Consultancy, DPRs, SDRF)	Project Cost (in US \$)	Population served
1	Risk Assessment,Modeling	Complete Uttarakhand	All 96 blocks (13 districts)	Consulting firm:- DHI (Singapore) – ATI (Thailand) – ERN (Mexico) JV	26.77 Cr	Complete Uttarakhand(10,086,292)
2	Slope stabilization study	rudraprayag & champawat	ukhimath, tanakpur	Consulting firm:- WAPCOS Ltd (India)	1.47 Cr	7394 & pilgram place (Temple kalimath & Purnagiri Temple)
3	River Morphology Study	pithoragarh, Chharchhum,bageshwar, champawat, rudrapryag ,chamoli,uttarkashi,tehri, pauri	juljibi, kalika, pancheswar,gangotri,devpray ag,rudraprayag, chamoli,srinagar,dewali, jakhani,badrinath,sonprayag,	Consulting firm:- DHI (India) – RITES Ltd JV	13.57 Cr	1000000
4	Strengthening Emergency Response Capacity:	Complete Uttarakhand	All 96 blocks(13 districts)	Consulting firm:- ASTRA microwave Product Ltd.	11.92 Cr	Complete Uttarakhand(10,086,292)
5	Decision Support System	Complete Uttarakhand	All 96 blocks (13 districts)	Consulting firm:- The Asian Institute of Technology, Thailand	15.00 Cr	Complete Uttarakhand(10,086,292)
6	Strengthening Hydro-Meteorological Network and Early Warning System	Under the project it is planned to install 107 AWS, 25 SFO (combination of Single Stevenson screen + Optical Rain Gauge +Automatic Weather Station), 28 ARG and 16 SG covering all 13 districts of the state. For procuring above said hydromet instrument bidding process was started and Astra Microwave Products Ltd	13 districts	Consulting firm:- ASTRA microwave Product Ltd.	2.46 Cr	Complete Uttarakhand(10,086,292)
7	Rapid Visual Screening (RVS)	Complete Uttarakhand	13 districts	Consulting firm:- DDF Consultants Pvt Ltd	3.1 Cr	Complete Uttarakhand(10,086,292)
8	Building Regulation for Resilience	Complete Uttarakhand	13 districts	Consulting firm:- The Energy and Resources Institute (TERI)	1.62 Cr	Complete Uttarakhand(10,086,292)

Appendix IX Details of Bridges built or retrofit under UDRP-AF (as on 22 June 2022)									
S.No	District	Block	Tehsil	Population Benifited	Name of the Sub Project	Category of Road	Contract Price (Rs. In Lakh)	D.O.S/ D.O.C	Current Status
1	2				3	4	6	7	8
1	Tehri Garhwal	Pratapnagar	Pratapnagar	2012000	Construction of 120 M span suspension bridle bridge over Jalkur river at Piplogi, Tehri Garhwal (W-2.80m)	Bridle Bridge	801.57	<u>25.04.2019</u> 27.07.2021	Completed
2	Tehri Garhwal	Bhilangana	Bhilangana	2463200	Construction of 48M Span Steel Truss Bridle Bridge over Balganga River at Kot Village (W 2.80 m)	Bridle Bridge	179.93	<u>03.08.2018</u> 15.07.2020	Completed
3	Tehri Garhwal	Narendra Nagar	Narendra Nagar	2058800	24 M span steel girder Motor Bridge on Km 11 of Agrakhal-Kusraila M/R (W-4.25 M)	VR	125.24	<u>01.02.2020</u> 18.09.2021	Completed
4	Tehri Garhwal	Narendra Nagar	Narendra Nagar	2058800	Reconstruction of 30 m Span Steel Girder Motor Bridge on Agrakhal-Kusraila Motor Road at KM 7. (W-4.25M)	VR	181.78	<u>20.02.2020</u> 27.10.2021	Completed
5	Tehri Garhwal	Bhilangana	Bhilangana	1748400	Reconstruction of 52M span steel truss motor bridge over Asen Gadera in KM 5 of Gadoliya-Pilkh-Ghansali motor road in Tehri (W-5.5M)	SH	708.17	<u>25.10.2020</u> 28.04.2022	Completed
6	Dehradun	Raipur	Raipur	442100	Construction of 30 M Span Steel Girder Bridge on Chamasari Majhada Motor Road, Km-2 (W-4.25M)	VR	210.74	<u>01.02.2020</u> 23.07.2021	Completed
7	Dehradun	Raipur	Raipur	587331	Reconstruction of 48M Span Steel Truss Motor Bridge over Kali Raw River in KM-10 of Dehradun-Sahastradhara Motor Road (W-7.5M)	ODR	604.49	<u>01.02.2020</u> 24.12.2021	Completed
8	Dehradun	Kalsi	Kalsi	1331700	Construction of 30 m Span Steel Girder Motor bridge in KM-16 of Vijay-Kwetha-Khatar motor road (W-5.5M)	VR	212.24	<u>01.02.2020</u> 23.07.2021	Completed
9	Uttarkashi	Bhatwari	Bhatwari	167600	Construction of 42 M. Span Steel Truss Motor Bridge over Kori Gaad on Sangam Chatti (W-5.50 M)	VR	472.14	<u>07.07.2018</u> 26.07.2020	Completed
10	Uttarkashi	Bhatwari	Bhatwari	195000	36 M span bridle steel girder bridge over Pilang Gaad on Pilang-Judau bridle path (W-2.80M)	Bridle Bridge	169.96	<u>16.12.2019</u> 08.11.2021	Completed
11	Uttarkashi	Mori	Mori	12900	Reconstruction of 42 m Span Steel truss motor bridge in KM- 11 of Arakot Chinwa Balcha motor road in District Uttarkashi (W-2.25)	VR	472.33	<u>01.02.2020</u> 04.11.2021	Completed
12	Uttarkashi	Naugaon	Naugaon	118900	48 m Span Steel truss motor bridge over kamal river village Thalli at Sada Name – Tok (W-4.25)	VR	610.94	<u>15.02.2020</u> 12.01.2022	Completed
13	Uttarkashi	Purola	Purola	94000	70M span Steel Truss bridle bridge over Kamal River at Bingsi Chani in Uttarkashi (W-1.80M)	Bridle Bridge	541.55	<u>01.07.2020</u> 09.02.2022	Completed
14	Uttarkashi	Bhatwari	Bhatwari	191500	36M span steel girder bridle bridge over Jamak Gadera on Jamak Tala tok bridle road in Uttarkashi (W-1.80M)	Bridle Bridge	150.03	<u>01.07.2020</u> 15.03.2022	Completed
15	Uttarkashi	Bhatwari	Bhatwari	67500	84 m Span Steel Truss Pedestrian Bridge over Bhagirathi River near village Chamkot (W-1.80M)	Bridle Bridge	533.19	<u>15.02.2020</u> <u>04.05.2022</u> 30.11.2022	Work in Progress
16	Uttarkashi	Dunda	Dunda	184900	24M span steel girder motor bridge in KM01 of Dhauntari Kamand M/R in Uttarakashi (W-5.50 M)	MDR	208.75	<u>01.07.2020</u> 03.02.2022	Completed
17	Uttarkashi	Dunda	Dunda	144200	42 M span steel truss bridle bridge over Jarkul River on Bagigoan Gajna bridle road in Uttarkashi (W-1.80M)	Bridle Bridge	202.58	<u>04.08.2020</u> 17.02.2022	Completed
18	Uttarkashi	Naugaon	Rajgarhi	64600	50 M span steel truss bridle bridge near KM 2 of Kund-Kotla motor road at Khund Khad in Uttarkashi (W-1.80M)	Bridle Bridge	252.08	<u>04.08.2020</u> 03.03.2022	Completed
19	Uttarkashi	Purola	Purola	85800	Construction of 48 M Span Steel Truss Motor Bridge over Kamal river on Netri Chandeli motor road at Km-3 (BR/80). (W-4.25M)	VR	658.94	<u>21.08.2020</u> 20.02.2022	Completed
20	Uttarkashi	Dunda	Dunda	183300	Construction of 36 M Span Steel Girder Bridle Bridge over Jalkur river on Sem Bhardar Gajna bridle road (BR/79). (W-1.80M)	Bridle Bridge	163.57	<u>05.11.2020</u> <u>20.05.2022</u> 31.07.2022	Work in Progress
21	Uttarkashi	Dunda	Dunda	39800	Construction of 40 M Span Steel Truss Bridle Bridge over Khurmola Gard at Hayudai Tok (Uttarkashi) (W-1.80M)	Bridle Bridge	153.35	<u>21.11.2020</u> 07.05.2022	Completed
22	Uttarkashi	Mori	Mori	80502	Construction of 90 M Bridle Suspension Bridge over Badasu River at Taluka Sirga Kuresa bridle path in Uttarkashi (W-1.80M)	Bridle Bridge	899.10	<u>08.01.2021</u> <u>20.08.2022</u> 30.09.2022	Work in Progress
23	Uttarkashi	Bhatwari	Bhatwari	144000	Reconstruction of 42 meter span Steel Truss motor Bridge over Bhagirathi River at Harsil in place of existing Bailey bridge (BR/69). (W-5.50 M)	MDR	573.01	<u>06.02.2021</u> <u>14.07.2022</u> 31.01.2023	Work in Progress
24	Pauri Garhwal	Ekeshwar	Ekeshwar	7869200	Construction of 45 m Span Steel Truss Bridge in KM-3 of Sisaldi Satpuli Motor Road (W-5.80M)	MDR	471.84	<u>01.02.2020</u> 18.03.2022	Completed
25	Pauri Garhwal	Jaiharikhal	Jaiharikhal	2175500	Construction of 70M span steel truss motor bridge over Kot Malla to Kot Tall Kandiya Kulasu Rithakhal motor road in Pauri (W-4.25M)	VR	949.47	<u>03.09.2020</u> <u>27.06.2022</u> 31.12.2022	Work in Progress
26	Pauri Garhwal	Kaljikhhal	Kaljikhhal	4673000	Reconstruction of 60 M Span Steel Truss Motor Bridge over Nayar River in Km-01 of Bhonsal-Bheti Motor Road (BR/51). (W-4.25)	MDR	573.29	<u>10.09.2020</u> <u>17.06.2022</u> 30.06.2022	Work in Progress
27	Pauri Garhwal	Rithakhal	Rithakhal		Construction of 200 M span precasted RCC Motor Bridge at Rathuadab over Mandal river (EPC mode) in Pauri (Span arragneement 5X40 M) Pile foundation in piers. (W-5.50 M)	VR	1845.5	<u>29.10.2020</u> <u>14.08.2022</u> 30.09.2022	Work in Progress
28	Chamoli	Ghat	Ghat	287820	Reconstruction of 45 m Span Steel truss bridle Bridge over Lakhi Chufila Gaad near Lankhi in District Chamoli (W-1.80M)	Bridle Bridge	388.55	<u>01.02.2020</u> 06.11.2021	Completed
29	Chamoli	Ghat	Ghat	287442	Construction of 36M span bridle steel truss bridge near village Jakhni over Rodha Gadera in Chamoli (W-1.80M)	Bridle Bridge	299.99	<u>08.01.2021</u> <u>28.04.2022</u> 30.06.2022	Work in Progress
30	Almora	Salr	Salt	1306700	Construction of 30 M span Steel Girder Motor Bridge at Km 01 of Balmara-Kedar-Syalde Motor Road (W-5.5 M)	VR	177.07	<u>05.10.2018</u> 11.07.2020	Completed
31	Almora	Bhikyasen	Bhikyasen	6938600	Construction of 105 M span Steel Girder Motor Bridge at Km 15 of Balmara-Kedar-Syalde Motor Road (W-5.50M)	VR	1372.16	<u>07.12.2018</u> <u>14.04.2022</u> 30.06.2022	Work in Progress
32	Almora	Salt	Salt		84M span steel truss m/bridge over Ramganga River on Gagas Udee Mahadev to Selapani Bhikiyasain Marchula M/r at Km37 in Almora (W-6 M)	VR	839.87	<u>02.10.2020</u> <u>20.10.2022</u> 31.12.2022	Work in Progress
33	Almora	Salt	Salt		70M span steel truss M/Bridge over Ramganga river on Hinaula Kaney Khalpati M/R at KM14 in Almora (W-4.25M)	VR	659.12	<u>10.09.2020</u> <u>01.08.2022</u> 31.12.2022	Work in Progress
34	Almora	Bhikyasen	Bhikyasen		Construction of 36 M span steel truss motor bridge over Ramganga River on Gagas Udee Mahadev to Selapani Bhikyasen Marchula motor road at KM 20 in Almora (W-6M)	VR	300.51	<u>08.10.2020</u> <u>30.09.2022</u> 30.09.2022	Work in Progress
35	Almora	Salt	Salt		Construction of 48M span steel truss motor bridge on Baikana Gadera on Pipna Manhaith Dangual motor road at KM7 in Almora (W-1.25)	VR	500.27	<u>28.08.2020</u> <u>21.04.2022</u> 30.06.2022	Work in Progress
36	Almora				Construction of 125 M Span Bridge at Bhatkot (near Bhatkot Jhala Village) (Under EPC Mode) (Span arrangement 1X80+1X45M) Pile foundation for pier. (W-1.80M)	Bridle Bridge	1191.42	<u>13.12.2020</u> <u>17.09.2022</u> 17.09.2022	Work in Progress
37	Almora	Chukhutiya	Chukhutiya		Construction of 125 M span bridle suspension bridge at Tadagtaal Near Dhanan in Almora (EPC mode) (Span arrangement 2X40+1X45M) Open foundaiton. (W-1.80M)	Bridle Bridge	1191.08	<u>19.12.2020</u> <u>17.09.2022</u> 17.09.2022	Work in Progress

S.No	District	Block	Tehsil	Population Benifited	Name of the Sub Project	Category of Road	Contract Price (Rs. In Lakh)	D.O.S/ D.O.C	Current Status
1	2				3	4	6	7	8
38	Almora	Salt	Salt		Construction of 70 M Span Steel Truss Bridle Bridge on Palagwadi-Chalureseem bridle road on Ramganga river (BR/85). (W-1.80M)	Bridle Bridge	491.44	06.02.2021 07.07.2022 30.11.2022	Work in Progress
39	Bageshwar	Kapkot	Kapkot	3130800	24 M Span motor bridge at Km 13 of Kapkot-Pindari M/r (W 5.5 mt) (W-5.50M)	MDR	397.48	27.01.2020 09.12.2021	Completed
40	Bageshwar	Kapkot	Kapkot	3149400	42 M Span motor bridge at Km6 of Bhyn-Guler M/R (W-1.25M)	VR	329.60	27.01.2020 27.04.2022 30.06.2022	Work in Progress
41	Bageshwar	Bageshwar	Bageshwar	2115400	36 M span bridle steel girder bridge near jakh-Jakheda M/R bit'n Kalarobe to Sera Village (W-1.80M)	Bridle Bridge	185.11	27.01.2020 12.01.2022	Completed
42	Bageshwar	Kapkot	Kapkot		Construction of 24 m Span Steel Motor Girder Bridge on Sangarh Basti Motor Road - Km 5 in District of Bageshwar (W-1.25M)	VR	280.95	15.02.2020 18.11.2021	Completed
43	Bageshwar	Garud	Garud	4342300	Construction of 30 M Span Girder Bridle Bridge from Bhitarkot to par Junior High School Bridle Road in District Bageshwar (W-1.80M)	Bridle Bridge	202.74	01.12.2020 31.03.2022	Completed
44	Bageshwar	Bageshwar	Bageshwar	3345800	Construction of 70 M span Steel Truss motor bridge on Bageshwar-Daufat M/R at Km 36 in Bageshwar (W-4.25)	MDR	679.27	10.12.2020 11.08.2022 11.08.2022	Work in Progress
45	Pithoragarh	Munsyari	Munsyari	6244800	70 M span steel truss Motor bridge at Km 166 of Thal Munsyari M/R at Hardiyanala (W-7.50M)	SH	1022.94	27.01.2020 12.06.2022 12.06.2022	Work in Progress
46	Pithoragarh	Gangolihaat	Gangolihaat	3932900	Reconstruction of 70M span steel truss motor bridge over Kulur River at Gangolihaat on Madanpur-Naini motor road KM2 in Pithoragarh (W-5.50M)	VR	1037.09	21.08.2020 22.05.2022	Completed
47	Pithoragarh	Berinag	Berinag	6426100	Construction of 90M Span Steel Truss Motor Bridge over Ramganga River in Km 25 of Berinag-Vinayak-Puranathal-Muwani Motor Road in Pithoragarh (BR/52) (W-5.50M)	MDR	1113.05	05.02.2021 26.07.2022 30.09.2022	Work in Progress
48	Pithoragarh	Didihaat	Didihaat	3676200	80M Span Steel Truss Bridle Bridge over Khoja River in Pithoragarh (W-1.80M)	Bridle Bridge	525.48	09.07.2020 21.05.2022 31.07.2022	Work in Progress
49	Champawat	Champawat 'B	Champawat 'B	1339234	Construction of 30M span steel girder motor bridge over Gandak River at KM-2 of Champawat to Manch Tamali motor road in Champawat (W-5.50M)	SH	237.04	21.08.2020 12.03.2022	Completed
50	Udham Singh Nagar	Sitarganj	Sitarganj		Construction of 120 M Double lane Pre-stressed R.C.C. motor Bridge over Sukhi River at Km-20 of Sirsa Band to Shakti Farm Jail Camp motor Road (Start from KM 293 of NH-74) and its Approach, District U S Nagar (Span arrangement 6X30M) Well foundation. (W-7.50M)	VR	1108.76	15.06.2019 28.02.2022	Completed
51	Nainital	Bhimtal	Bhimtal		32M span steel girder motor bridge on Basutiya-Dogda motor road at KM 1 in Nanital (W-4.25M)	VR	201.94	10.09.2020 14.02.2022	Completed
52	Nainital	Betalghat	Betalghat	1445500	Construction of 60 M Span Steel Motor Bridge on Ghughutiyadhar-Betalghat-Khairna-Syalwadi-Odakhan-Pasiyapani-Mukteshwar Motor Road (No.62) at Km 35 in Nainital (W-7.50M)	SH	656.58	29.10.2020 15.05.2022 30.06.2022	Work in Progress
53	Nainital	Betalghat	Betalghat	710474	Construction of 160 M span bridle steel arch bridge between Tiwari Goan and village Ghangreti over Kosi river in District in NTL (EPC Mode) (Span arrangement 2X80) Pile foundation for pier. (W-1.80M)	Bridle Bridge	1382.94	13.11.2020 30.09.2022 30.09.2022	Work in Progress
54	Nainital	Okhalkanda	Okhalkanda	5981800	Reconstruction of 42 M span Steel truss motor bridge in KM 85 of Khutani-Bhawali, Dhanachuli-Okhalkanda-Khansyu-Patlot M/R (SH 64) in NTL (W-5.50M)	SH	601.20	01.12.2020 20.06.2022 31.10.2022	Work in Progress
55	Nainital	Betalghat	Betalghat		Construction of 90 M sapn bridle Arch steel truss bridge between village Talli Sethi and Village Simtaya Over Kosi River in NTL (W-5.50)	Bridle Bridge	620.91	10.12.2020 16.07.2022 16.07.2022	Work in Progress
56	Nainital	Betalghat	Betalghat		Construction of 125 M Span arch steel truss bridle bridge between village Chapad and Village Ropa over Kosi river in District Nainital (Span arrangement 2X62.5 M) Pile foundation for pier. (W-1.80M)	Bridle Bridge	675.92	14.11.2020 16.07.2022 16.07.2022	Work in Progress
57	Nainital	Betalghat	Betalghat		Construction of 210 M Bridle Bridge between Village Amel and Village Khairali Gaon over Kosi River. (EPC) (Span arrangement 5X42M) Pile foundaiton for pier.(W-1.80M)	Bridle Bridge	1094.38	28.11.2020 30.09.2022 30.09.2022	Work in Progress
58	Rudraprayag	Jakholi	Jakholi	297179	Reconstruction of 36M span Steel Girder Motor Bridge over the Koti-Gadera at KM6 of Vijaynagar-Taila Motor Road in RUPG	MDR	303.53	11.11.2020 30.05.2022 30.06.2022	Work in Progress

S. no.	Name of Bridge	Package	District	Block	No of Village Benifted	Name of Village
1	42 M Span steel Truss Motor Bridge Over Kori Gaad on Sangam Chatti, Uttarkashi	UDRP/AF/33(BR)	Uttarkashi	Bhatwari	8	Gangori
						Gajoli
						Naugaon
						Aghora
						Daohla
						Dodital
						Jakhali
						Ghund
2	Construction of 36 M span Bridle Steel Girder Bridge over Pilang Gaad on Pilang-Judau Bridle Path in District Uttarkashi	UDRP/AF/34(BR)		Bhatwari	3	Pilang
						Silla
						Jadao
3	Construction of 84 m Span Steel Truss Pedestrain Bridge over Bhagirathi River near village Chamkot	UDRP/AF/72(BR)		Bhatwari	2	Dilsaur
						Chamkot
4	Construction of 36m Span Bridle Steel Girder Bridle Bridge over Jamak Gadera on Jamak Tala Tok Bridle Road in district Uttarkashi	UDRP/AF/89 (BR)		Bhatwari	3	Maneri
						Jamak
						Kamar
5	Construction of 42 M Span Steel Truss Bridle Bridge over Jarkul River on Bagigaon Gajna Bridle Road in District Uttarkashi	UDRP/AF/90 (BR)		Dunda	3	Bagi
						thandi
						Kamad
6	Construction of 24M Span Steel girder Bridge in Km-1 of Dhauntri Kamand Motor Road in District Uttarkashi	UDRP/AF/41 (BR)		Dunda	5	Dhauntari
						Kamad
						Dunda
						Bhaintgaon
						Lodara
7	Construction of 36M Span Steel girder Bridle Bridge over Jalkur River on Sembhardar Gajna bridle road in District Uttarkashi	UDRP/AF/79 (BR)		Dunda	4	Jalang
						Thandi
						Bharargaon
						Kamad
8	Construction of 40m Span Steel Truss Bridle Bridge over Khurmola Gard at Hayudai Tok in district Uttarkashi	UDRP/AF/BR/82		Dunda	2	Genwala
						Bandarseun
9	Over Bhagirathi River at Harsil	UDRP/AF/BR/69		Bhatwari	3	Kharsali
						Bagori
						Mukhawa
10	Reconstruction of 42 m Span Steel truss motor bridge in KM- 11 of Arakot Chinwa Balcha motor road in District Uttarkashi	UDRP/AF/59(BR)		Mori	7	Adasu
						Arakot
						Balawate
						Barnali
						Bhakwar
						Bhitri
						Bhutanu
11	Construction of 48m Span Steel Truss Motor Bridge over Kamal River near village Thalli at Sada Name-Tok	UDRP/AF/64(BR)		Naugaon	2	Naugaon
						Thali
						Mungra
						Sunara
						Tunalka
12	Construction of 70M Span Steel Truss bridle Bridge over Kamal river at Bingsi Chaini in District Uttarkashi	UDRP/AF/81 (BR)		Puraula	4	Bingsi
						Kwari
						Hudoli
						Chandeli
13	Construction of 48 M Span Steel Truss Motor Bridge over Kamal River on Netri Chandeli Motor Road at Km-3 in District Uttarkashi	UDRP/AF/80 (BR)		Puraula	5	Netri
						Chandeli
						Purola
						Khalari
						Chaptari
						Kud kotla

14	Construction of 50 M Span Steel Truss Bridle Bridge Near Km-2 of Kund Kotla Motor Road at Kund Khad in District Uttarkashi	UDRP/AF/91/(BR)		Naugaon	5	Nald
						Koti Banal
						gadoli
						pujeli
15	Construction of 90 M Bridle Suspension Bridge over Badasu River at Tluka Sirga Kuresa Bridle Path in District Uttarkashi	UDRP/AF/58/(BR)		Mori	4	Tulka
						Sirga
						Kunara
						Badasu
16	Construction of 48M Span Steel Truss Pedestrian Bridge over Balganga River at Kot Village in District Tehri Garhwal	UDRP/AF/30(BR)	Tehri	Bhilangana	7	Kot
						Vishan
						Dalla
						Bhigun
						Toli
						Saunla
						Kundiyali
						Jakhana
						Kundi
17	Construction of 120M Suspention Bridge over Jalkur River at Piplogi Village in District Tehri Garhwal	UDRP/AF/29/BR		Pratapnagar	8	Piplogi
						Bijpur
						Pujargaon
						Thapla
						Noughar
						Panyali
						Kadiyal
						Rawat Gaon
18	Construction of bridge on KM-11 of Agrakhal Kusraila	UDRP/AF/36/BR		Narendra Nagar	6	Chald Gaon
						saldogi
						Kakhil
						diwli
						Khark
						kasmoli
19	Construction of bridge on Chamasari Majhada MR	UDRP/AF/38/BR		Raipur	2	Majhdhera
						Karligard
20	Construction of steel Truss Bridge on Vijay Kwetha Khatal MR KM-16	UDRP/AF/56/BR		Kalsi	9	Chamdi
						Maletha
						Datnu
						Barnu
						Bukhtari
						Sema
						Kophati
						Kuitha
						Bait
21	48 Mtr span bridge steel truss motor bridge over kali raw river in km -10.	UDRP/AF/57/BR		Kalsi	13	Kairwan Karanpur
						Dhanaula
						Timilimansingh
						Pustari
						Bandawali
						Marautha
						Chalang
						Nagalhat Nala
						Khuranwa
						Sindhauwali Dhauran
						Kirsali
						Bhandariwala
						Kulhan Mansingh
22	Bridge on KM-7 of Agrakhal Kusraila MR	UDRP/AF/63/BR		Narendra Nagar	6	Chald Gaon
						saldogi
						Kakhil
						diwli
						Khark
						kasmoli
23	Bridge Over Asena Gadera at KM-5 of Gadoliya-Pilkhi-Ghansali MR	UDRP/AF/55/BR		Bhilangana	6	Chahgadoliya
						Devel
						Ashena
						Padagali
						Gaujiyana

						Pilkhi
						Lankhee
						Banjbagarh
						Kuntari
						Sainti
						Bhatiyana
						Benti
						Phali
						Koti
						Dovalya
						Semar
						Timali
						Dangwal Gaon
						Jakholi
						Baman Gaon
						jakhni
						kanda
						Khunana
						Luntra
						Pagna
						Mankhi
						Bijar
						Sisaldi
						Kadola
						Peeda
						Bebadi
						Chaid
						Kafaldi
						Kanda khal
						Kimar
						Punder Gaon Malla
						Majakot
						Jui Talli
						Kandiya
						Kulasu
						Kot Kandaye
						Gadka Margaon
						Chami
						Mirchora
						Bheti
						seron
						Kanda
						Sural Gaon
						Dang
						Bhati Gaon
						Bhayun
						Farsali walli
						Farsali Palli
						Guler
						Sangad
						Vasti
						Suding
						Saung
						Munar
						Loharkhet
						Gani Gaon
						Saling
						Pousari
						Udkholi
						Ratmoli
						Jajurali
						Kula Rangchora

			Bageshwar and Almora			Bankot
36	Construction of 30M Span Motor Steel Girder Bridle Bridge from Bhitarkot to Pur Junior High School Bridle Road in District Bageshwar	UDRP/AF/BR/77		Garud	4	Bhitar Kot
						Thaklan
						Kohina
						Ghiroli
37	Construction of 30m span steel girder bridge at km 01 of balmara kedar syalde motor road, district almora	UDRP/AF/31(BR)		Sult	4	Udaypur
						Balmara
						Bhkuda
						Champanagar
38	Construction of 105 m span steel girder bridge at km 15 of balmara kedar syalde motor road, district almora	UDRP/AF/32(BR)		Bhikiyasain	10	Afi
						Talai
						Khatal Gair
						Jaspur
						Nagargaon
						Timali
						Paithana
						Kehad gaw
						mehngyari
						Khaderagaon
39	Construction of 48 meter span steel truss bridge over Baikana Gadera on Pipna Manahaith dangula Motor Road at Km. 7 Dist. Almora.	UDRP/AF/BR/93	Berinag	Sult		
40	Construction of 48 meter span steel truss bridge over Baikana Gadera on Pipna Manahaith dangula Motor Road at Km. 7 Dist. Almora.	UDRP/AF/BR/94		Sult		
41	Construction of 84 m Span steel Truss Bridge Over Ramganga River on Gagas Udee Mahadev to selapni Bhikiyasen Marchula motor road at Km 37 in district Almora.	UDRP/AF/BR/92		Sult		
42	Construction of 36 meter span steel truss bridge over Ramganga river on Gagas Udee Mahadev to Selapani Bhikiyasen Marchula Motor Road at Km 20 Dist. Almora.	UDRP/AF/BR/84		Sult		
43	Construction of 125 M Span Suspension Bridge including approaches on both side at Tadagtaal near Dhanan under EPC mode in District Almora.	UDRP/AF/BR/87		Chaukhutiya		
44	Construction of 125 M Span Suspension Bridge including Approaches on both side at Bhatkot (Near Bhatkot Jhala village) under EPC mode in District Almora	UDRP/AF/BR/88		Chaukhutiya		
45	Construction of 70 M Span Truss Bridle Bridge on palagwadi - chulerasem bridle road over Ramganga river in District Almora	UDRP/AF/BR/85		Chaukhutiya		
46	Reconstruction of 70 m Span Steel Truss Motor Bridge over kulur river at Gangolighat Madanpur Naini Motor Road at km 2 in Distt. Pithoragarh.	UDRP/AF/46BR)		Gangolihat	5	Sera Urf Badoli
						Naini
						Gwasi Kot
						Kot
						Sartola
47	Reconstruction of 70 m Span Steel Truss Motor Bridge at km 166 of Thal to Munsyari Motor Road at Hardiyanala in Distt. Pithoragarh.	UDRP/AF/47(BR)		Munsyari	7	Nachani
						Tejam
						Kwiti
						Girgaon
						Dor
						Ginni
						Hokara
48	Reconstruction of 80 m Span Steel truss Bridle Bridge over Khoja River in Distt. Pithoragarh.	UDRP/AF/BR/78		Didihat	5	Khoja,
						Pamsyari
						Malla dunni
						Khandar
						Bhadeli
						Punaithi

49	Reconstruction of 30 m Span Steel Girder Motor Bridge over Gandak River on Manch Tamoli Motor Road at km 2 in Distt. Champawat.	UDRP/AF/BR/96		Champawat	11	Latoli
						Tyarkuda
						Majgaon
						Lista
						Shaktipur
						Kanalgaon
						Khark Karki
						Champawat
						Dhakna Badola
						Chandani
50	Bridge at Gangolihat Over Ramganga River at Berinag Vinayak Puranathal Bhuwani MR	UDRP/AF/BR/52		Berinag	7	Gadera
						Machhikhet
						Belkot Pande
						Purana Thal
						Jajar Maphi
						Jajar Sirtoli
						Jajar Khitoli
51	Construction of 120m Span Double Lane Prestressed RCC Motor Bridge & it's Approach Road over Sukhi River at km 20 of Sirsa Bend to Shakti Farm Jail Camp motor Road in Distt. U.S. Nagar.	UDRP/AF/BR/35	Haldwani	Sitarganj	9	Subhash Naga
						Shakti Farm
						Ranjeet Nagar
						Mahendra Nagar
						Jainagar
						Tiger Nagar
						Thakur Nagar
						Bekantpur
						Govind Nagar
52	Reconstruction of 32 m span Steel Girder Motor Bridge on Basutiya Dogda Motor Road at km-1 in the district of Nainital	UDRP/AF/BR/65		Bhimtal	5	Dogda
						Bashutiya
						Lamjala
						Jayoli
						Malyuti
						Majeda
53	Construction of 60 m span steel truss Motor Bridge on Ghughutiyadhar-Betalghat Khairna Suyalwadi-Odakhan-Pasiyapani-Bhateliya-Mukteshwar Motor Road (No. 62) at Km 35 in district Nainital.	UDRP/AF/BR/75		Betalghat	5	Dhaniakote Dariaman
						Simlakha
						Basgaon
						Ghangrati
54	Construction of 125 m span Arch Bridge Between Vill. Chhapad and Vill. Ropa Over Kosi River in district Nainital.	UDRP/AF/BR/99		Betalghat		
55	Construction of 90 m Span Bridle Arch Steel Truss Bridge between Talli Sethi and village Simtaya Over Kosi River in District Nainital.	UDRP/AF/BR/98		Betalghat		
56	Reconstruction of 42 m Span Steel Truss Bridge in km 85 of Khutani, Bhowali, Dhanachuli,Okhalkanda, Khansyu, Patlot Motor Road (S.H.No. 64) in District Nainital.	UDRP/AF/BR/54		Okhal Kanda	6	Galani
						Jhargaon Talla
						Kala agar
						Gargari Malli
						Chamoli
						Dall Kanya
57	Suspension Bridge Between Village Tiwari Goan and Village Ghangreti over Kosi River	UDRP/AF/BR/86		Betalghat	13	Ghaghreti
						Rauliagaon
						Tiwaregaon
						Paharkote
						Talli Pali
						Badhani Gaon
						Talla Gaon
						Malla Gaon
						Tangura Bara
						Mallipali
						Tangura Chhota
						Tangura Lagga Ghiroli
						Dandesari

58	Construction of 210 m Span arch steel Bridle Suspension Bridge including approaehes between village Amel and village Khairali Over Kosi River in District Nainital. (EPC).	UDRP/AF/BR/100		Betalghat		
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Appendix X

**Source : Through email from The Program Director, UDRP
office, Government of Uttarakhand, Dehradun.**

CREDIT NUMBER 5313 -IN

Project Agreement

(Uttarakhand Disaster Recovery Project)

between

INTERNATIONAL DEVELOPMENT ASSOCIATION

and

STATE OF UTTARAKHAND

Dated *January 9*, 201*4*

CREDIT NUMBER 5313 -IN

PROJECT AGREEMENT

Agreement dated January 9, 2014, entered into between INTERNATIONAL DEVELOPMENT ASSOCIATION ("Association") and the STATE OF UTTARAKHAND ("Project Implementing Entity") ("Project Agreement") in connection with the Financing Agreement ("Financing Agreement") of same date between INDIA ("Recipient") and the Association. The Association and the Project Implementing Entity hereby agree as follows:

ARTICLE I — GENERAL CONDITIONS; DEFINITIONS

- 1.01. The General Conditions (as defined in the Appendix to the Financing Agreement) constitute an integral part of this Agreement.
- 1.02. Unless the context requires otherwise, the capitalized terms used in this Agreement have the meanings ascribed to them in the Financing Agreement or the General Conditions.

ARTICLE II — PROJECT

- 2.01. The Project Implementing Entity declares its commitment to the objectives of the Project. To this end, the Project Implementing Entity shall carry out the Project in accordance with the provisions of Article IV of the General Conditions, and shall provide promptly as needed, the funds, facilities, services and other resources required for the Project.
- 2.02. Without limitation upon the provisions of Section 2.01 of this Agreement, and except as the Association and the Project Implementing Entity shall otherwise agree, the Project Implementing Entity shall carry out the Project in accordance with the provisions of the Schedule to this Agreement.

ARTICLE III — TERMINATION

- 3.01. For purposes of Section 8.05 (c) of the General Conditions, the date on which the provisions of this Agreement shall terminate is twenty (20) years after the date of this Agreement.

ARTICLE IV — REPRESENTATIVE; ADDRESSES

- 4.01. The Project Implementing Entity's Representative is the Chief Secretary/Additional Chief Secretary of Uttarakhand.

4.02. The Association's Address is:

International Development Association
1818 H Street, NW
Washington, DC 20433
United States of America

Cable:

Telex:

Facsimile:

INDEVAS
Washington, D.C.

248423(MCI)

1-202-477-6391

4.03. The Project Implementing Entity's Address is:

Secretariat
Subhash Road
Dehradun
Uttarakhand
PIN 248 001

Facsimile:

+91 (135) 271-2098

AGREED at New Delhi, India, as of the day and year first above written.

INTERNATIONAL DEVELOPMENT
ASSOCIATION

By



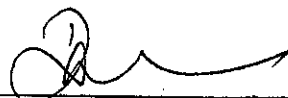
Authorized Representative

Name: _____

Title: _____

STATE OF UTTARAKHAND

By



Authorized Representative

Name: _____

Title: _____

SCHEDULE

Execution of the Project

Section I. Implementation Arrangements

A. Institutional Arrangements

1. The Project Implementing Entity shall vest the responsibility for the overall coordination of Project activities in USDMA.
2. Notwithstanding paragraph 1 above, the Project Implementing Entity shall:
 - (a) maintain throughout the period of implementation of the Project, a Core Committee, headed by the Chief Secretary, with membership, powers, functions and competencies acceptable to the Association, as shall be required to provide policy guidance for, and exercise general oversight of, the implementation of Project activities by USDMA and the Line Departments and Agencies, including monitoring and evaluation of the Project;
 - (b) maintain throughout the period of implementation of the Project, a High Powered Committee for Sanctioning of Post Disaster Reconstruction Works, headed by the Additional Chief Secretary, with membership, powers, functions, competencies, staff and resources acceptable to the Association, as shall be required for, *inter alia*: (i) according all financial and administrative approvals and sanctions for the carrying out of post disaster recovery, reconstruction and risk mitigation activities; (ii) guaranteeing inter-departmental coordination; and (iii) facilitate any external clearances required for Project activities;
 - (c) maintain throughout the period of implementation of the Project, a Project Management Unit ("PMU") within USDMA: (i) headed by a project director assisted by competent staff, all with experience and qualification, in numbers and under terms of reference acceptable to the Association; and (ii) provided with such powers, financial resources, functions and competences, acceptable to the Association, as shall be required for, *inter alia*: (A) carrying out of day-to-day implementation of activities under Sub-component 1.1 (for Housing Sub-grants) and Components 3, 4 and 5 of the Project, as well as the overall financial management of the Project; (B) coordinating, monitoring and evaluating the Line Departments and Agencies' day-to-day implementation of Components 1.1 (other than Housing Sub-grants), 1.2. and 2 of the Project, and related procurement activities, including providing procurement assistance thereto; (C) acting as secretariat to the High

Powered Committee for Sanctions and Post Disaster Steering Committee; (D) maintaining the Project's management information systems and producing quarterly reports; and (E) carrying out regular quality control and supervision of the Project's performance and deliverables as pursuant to the Operations Manual;

- (d) maintain throughout the period of implementation of the Project, Project Implementation Units ("PIUs") within: (i) USIDC for purposes of Component 1.1 (other than Housing Sub-grants) of the Project; (ii) the PWD for Component 2 of the Project; and (iii) USDMA, and technical support agencies for Component 3; which units shall: (A) have personnel with experience and qualification, in numbers and under terms of reference acceptable to the Association; (B) be provided with such powers, financial resources, functions and competences, acceptable to the Association, as shall be required for the carrying out of the day-to-day implementation of the Project activities under their purview; (C) carry out regular quality control and supervision of contractors' performance and their deliverables pursuant to the Operations Manual; and (D) ensure implementation of/compliance with the Safeguard Documents and the Project's reporting requirements.; and
- (e) for each district, establish prior to the commencement of Project activities in such district, and thereafter maintain throughout the period of implementation of the Project, District Level Coordination Unit, headed by the District Magistrate, with membership, powers, functions and competencies acceptable to the Association, as shall be required to, *inter alia*: (i) coordinate and monitor the performance of reconstruction and disaster response activities among the various district/block level executing agencies; (ii) identify Selected Beneficiaries and disclose the lists thereof; (iii) identify small works at district level (primarily for Sub-component 2.3 of the Project); (iv) ensure the proper operation of grievance redress mechanisms; and (v) resolve any issues arising from the identification of suitable land for the housing reconstruction efforts.

B. Project Documents

The Project Implementing Entity shall:

- (a) implement the Project in accordance with the Operations Manual, the Safeguards Documents and the GAAP; provided however, that in the event of conflict between the provisions of said manual, plan or documents, on the one hand, and those of this Agreement and/or the Financing Agreement, on the other hand, the provisions of this Agreement and/or the Financing Agreement shall prevail; and

- (b) refrain from amending, suspending, waiving, and/or voiding any provision of the Operations Manual and/or the GAAP, whether in whole or in part, without the prior written concurrence of the Association.

C. Anti-Corruption

The Project Implementing Entity shall ensure that the Project is carried out in accordance with the provisions of the Anti-Corruption Guidelines.

D. Resilient Housing

1. For purposes of carrying out Component 1.1 of the Project, the Project Implementing Entity shall determine the Selected Beneficiaries whose houses will be constructed/reconstructed, in accordance with the guidelines and selection criteria set forth in the Operations Manual.
2. Upon the determination of the Selected Beneficiaries, the Project Implementing Entity, through the USDMA, shall enter into an agreement with each Selected Beneficiary who opts to receive a Housing Sub-grant for the owner-driven construction/reconstruction of his/her houses using traditional materials, under terms and conditions set forth in the Operations Manual, which agreement shall provide:
 - (a) the Selected Beneficiary's commitment to: (i) use the resources of the Housing Sub-grant for the reconstruction and/or rehabilitation of his/her home, following the architectural standards and technical specifications set forth in the Operations Manual; and (ii) promptly contribute out of his/her own resources all necessary funds to complete said construction and/or rehabilitation works;
 - (b) the amount of the Housing Sub-grant;
 - (c) the conditions for release of the Housing Sub-grant to such Selected Beneficiary in several tranches upon the Selected Beneficiary's achieving pre-agreed milestones in the construction work of his/her house, subject to the verification mechanisms provided for in the Operations Manual;
 - (d) the obligation and agreement of the Selected Beneficiary to abide by, and comply with, the Safeguards Documents;
 - (e) the obligation and agreement of the Selected Beneficiary to accept random and/or unannounced physical or documentary inspection by the

USDMA and/or the Association, in relation to the construction work, and the use of the proceeds of the Housing Sub-Grant; and

- (f) the Project Implementing Entity's right to suspend or terminate the right of the Beneficiary to use the proceeds of the Housing Sub-Grant, upon any failure of the Selected Beneficiary to perform its obligations under the agreement, or upon notice by the Association that it intends to exercise any of its remedies under Section 6.02, 6.03 and 6.06 of the General Conditions.

- 3. The Project Implementing Entity shall only utilize the funds of this Financing to pay for Housing Sub-grants to Selected Beneficiaries that have substantially completed reconstruction of their housing unit, in accordance with the quality standards set forth in the Operations Manual. Housing Sub-grants paid to Selected Beneficiaries whose housing units are deemed incomplete and/or of substandard quality, shall be deemed ineligible for financing under the Project, except in the event of *force majeure*. Any amounts advanced for the financing for such ineligible Housing Sub-grants shall be promptly reimbursed to the Association upon the Association's request.

E. Safeguards

- 1. The Project Implementing Entity shall:
 - (a) carry out the Project in accordance/compliance with the ESMF and the instruments (to be) prepared pursuant to paragraph 2 of this Sub-Section, and pursuant to the objectives, policies, procedures, compensation arrangements and other provisions set forth therein, in a manner and substance satisfactory to the Association (the "Safeguard Documents"); and
 - (b) refrain from taking any action, or consenting to an action to be taken, which would prevent or interfere with the implementation of the Safeguard Documents, including any amendment, suspension, waiver, and/or voidance of any provision thereof, whether in whole or in part, without the prior written concurrence of the Association.
- 2. The Project Implementing Entity shall refrain from inviting bids, selecting any contractors or undertaking any other preparatory works, or issuing any Housing Sub-grant for the implementation of Project activities, until and unless:
 - (a) the respective Line Departments and Agencies implementing such works or activities have: (i) carried out a social and environmental screening thereof, in accordance with the guidelines, standards and procedures set forth in the ESMF; and (ii) produced the respective screening report;

- (b) if the screening reports so require, the necessary environmental assessments, environmental management plans, social assessments, social management plans and resettlement action plans for Displaced Persons ("Safeguards Documents"), as the case may be, has/have been prepared in a manner and substance satisfactory to the Association, pursuant to the ESMF; and
 - (c) the foregoing Safeguard Documents have been publicly disclosed by the Project Implementing Entity, in local language(s) at the Project sites, at least fifteen (15) days prior to the respective bidding invitations or the initiation of any contractor selection process for the related works.
- 3. The Project Implementing Entity shall, by no later than forty-five (45) days after the end of each calendar semester, furnish to the Association, for its records and public disclosure, a compilation of all the social and environmental screening reports prepared by the Line Departments and Agencies pursuant to paragraph 2.(a) of this Sub-Section I.E during such calendar semester.
- 4. The Project Implementing Entity shall ensure that, prior to commencing any civil works under the Project:
 - (a) all necessary governmental permits and clearances for such civil works shall have been obtained from the competent governmental authority/ies;
 - (b) all pre-construction conditions imposed by the governmental authority/ies under such permit(s) or clearance(s) shall have been complied with/fulfilled; and
 - (c) all resettlement measures set forth in the applicable resettlement action plans prepared pursuant to paragraph 2(b) of this Section I.E, shall have been fully executed, including the full payment of compensation prior to displacement and/or the provision of relocation assistance to all Displaced Persons, as per the entitlements provided in the ESMF and/or the resettlement action plans.
- 5. The Project Implementing Entity shall ensure that each contract under the Project includes the obligation of the relevant contractor to comply with the relevant Safeguard Documents applicable to the respective activities commissioned/awarded pursuant to said contract.
- 6. The Project Implementing Entity shall, throughout the period of implementation of the Project: (a) maintain monitoring and evaluation protocols and record keeping procedures acceptable to the Association and adequate to enable the Project Implementing Entity and the Association to supervise and assess, on an

on-going basis, the implementation of/compliance with the Safeguards Documents, as well as the achievement of the objectives thereof; and (b) furnish to the Association quarterly reports on the general compliance with the Safeguard Documents, the social and environmental impact of Project activities, and the results of the mitigation or benefit-enhancing measures applied thereto, during the period preceding the date of each such report.

7. The Project Implementing Entity shall ensure that the following Project expenditures are financed exclusively out of the Project Implementing Entity's own resources, and, to this end, shall provide, as promptly as needed, the resources required therefor, namely:
 - (a) all land acquisition required for the purpose of the Project;
 - (b) any compensation, resettlement and rehabilitation assistance or payments to Displaced Persons in accordance with the provision of the applicable resettlement action plans; and
 - (c) any tree cutting, forest land diversion costs, and/or other expenditures associated with the obtaining of any regulatory clearances and/or utilities relocation.
8. In the event of any conflict between the provisions of any of the Safeguard Documents, on the one hand, and the provisions of this Agreement and/or the Financing Agreement, on the other hand, the provisions of this Agreement and/or the Financing Agreement shall prevail.

F. Contingent Emergency Response Mechanism

1. In order to ensure proper implementation of the Component 6 of the Project ("CER Component"), the Project Implementing Entity shall:
 - (a) prepare and furnish to the Association for its review and approval, an operations manual (the "CER Operations Manual") which shall set forth detailed implementation arrangements for the CER Component, including: (i) designation of terms of reference for, and resource to be allocated to, the entity to be responsible for the coordination and implementation of the CER Component (the "Coordinating Authority"); (ii) specific activities which may be included in the CER Component, Eligible Expenditures required therefor ("Emergency Expenditures"), and any procedures for such inclusion; (iii) financial management arrangements for the CER Component; (iv) procurement methods and procedures for Emergency Expenditures to be financed under the CER Component; (v) documentation required for withdrawals of Emergency Expenditures; (vi) environmental and social safeguards instruments,

- including management frameworks, assessments and/or plans for the CER Component consistent with the Association's policies on the matter; and (vii) any other arrangements necessary to ensure proper coordination and implementation of the CER Component;
- (b) afford the Association a reasonable opportunity to review said proposed CER Operations Manual;
 - (c) promptly adopt the CER Operations Manual for the CER Component as shall have been approved by the Association;
 - (d) ensure that the CER Component is carried out in accordance with the CER Operations Manual, provided however that in the event of any inconsistency between any of the provisions of the CER Operations Manual and those of this Agreement and/or the Financing Agreement, the provisions of this Agreement and/or the Financing Agreement shall prevail; and
 - (e) not amend, suspend, abrogate, repeal or waive, whether in whole or in part, any provision of the CER Operations Manual without the prior approval by the Association.
2. The Project Implementing Entity shall, throughout the period of implementation of the CER Component, maintain the Coordinating Authority, with adequate staff and resources satisfactory to the Association.
3. The Project Implementing Entity shall undertake no activities under the CER Component (and no activities shall be included in the CER Component) unless and until the following conditions have been met in respect of said activities:
- (a) (i) the Recipient and the Project Implementing Entity have determined that an Eligible Crisis or Emergency has occurred; (ii) the Project Implementing Entity has furnished to the Association a request to include said activities in the CER Component in order to respond to said Eligible Crisis or Emergency, and (iii) the Association has agreed with such determination, accepted said request and notified the Recipient and the Project Implementing Entity thereof; and
 - (b) the Project Implementing Entity has prepared and disclosed all safeguards instruments required for said activities, in accordance with the CER Operations Manual, the Association has approved all such instruments, and the Project Implementing Entity has implemented all actions which are required to be taken under said instruments prior to the commencement of such activities.

Section II. Project Monitoring, Reporting and Evaluation

A. Project Reports

1. The Project Implementing Entity shall monitor and evaluate the progress of the Project and prepare Project Reports in accordance with the provisions of Section 4.08 of the General Conditions and on the basis of indicators agreed with to the Association. Each such Project Report shall cover the period of one (1) calendar quarter, and shall be furnished to the Recipient and the Association not later than sixty (60) days after the end of the period covered by such report.
2. The Project Implementing Entity shall: (a) prepare the Project execution/completion report referred to in Section 4.08 (c) of the General Conditions; and (b) furnish it to the Recipient and the Association not later than six (6) months after the Closing Date.

B. Financial Management, Financial Reports and Audits

1. The Project Implementing Entity shall maintain a financial management system and prepare financial statements in accordance with consistently applied accounting standards acceptable to the Association, both in a manner adequate to reflect the operations and financial condition of the Project Implementing Entity, including the operations, resources and expenditures related to the Project.
2. Without limitation on the provision of Part A of this Section, the Project Implementing Entity shall prepare and furnish to the Recipient and the Association, not later than sixty (60) days after the end of each calendar quarter, an interim financial report for the Project covering the quarter in form and substance satisfactory to the Association.
3. The Project Implementing Entity shall have the Project financial statements referred to above audited by independent auditors acceptable to the Association, in accordance with consistently applied auditing standards acceptable to the Association. Each audit of these financial statements shall cover the period of one (1) fiscal year of the Project Implementing Entity. The Project Implementing Entity shall ensure that the audited financial statements for each period shall be: (a) furnished to the Recipient and the Association not later than nine (9) months after the end of the period; and (b) made publicly available in a timely fashion and in a manner acceptable to the Association.

Section III. Procurement

1. All goods, works and services required for the Project and to be financed out of the proceeds of the Financing shall be procured in accordance with the provisions of Section III of Schedule 2 to the Financing Agreement.

2. The Project Implementing Entity shall:

- (a) establish by no later than six (6) months after the issuance of the first specific procurement notice for the Project, and thereafter maintain throughout the period of implementation of the Project, a fully operational procurement documentation and record keeping system, in a manner and substance acceptable to the Association, including a freely and publicly accessible database, showing the procurement plans and procurement notices, invitations to bid, bidding documents and requests for proposals, as well as the procurement status of various contracts, including short lists of consultants, contract awards and the complaints received and the actions taken in respect thereof. The Project implementing entity shall update such details on a monthly basis throughout the period of implementation of the Project; and
- (b) establish by no later than three (3) month after the Effective Date, and thereafter maintain throughout the period of implementation of the Project, a system for the handling of procurement complaints, in a manner and substance acceptable to the association, which system shall include, *inter alia*: (i) a second tier appeal system; and (ii) a complaint database with an interface (link) to the management information systems, providing free and public access for the submission of electronic claims. Notwithstanding the foregoing, for any procurement done through International Competitive Bidding, the Association's prescript complaint redress mechanism shall apply.

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

1818 H Street N.W.
Washington, D.C. 20433
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(202) 473-1000
Cable Address: INTBAFRAD
Cable Address: INDEVAS

January 9, 2014

Mr. S. G. Dastidar
Controller of Aid Accounts and Audit
Department of Economic Affairs, Ministry of Finance
5th Floor, 'B' Wing
Janpath Bhawan, Janpath
New Delhi, India 110 001

Dear Sir,

**Re: IDA Financing 5313-IN
(Uttarakhand Disaster Recovery Project)
Additional Instructions: Disbursement**

I refer to the Financing Agreement between India (the "Recipient") and the International Development Association (the "Association") for the above-referenced project, dated 9/1/14. The Agreement provides that the Association may issue additional instructions regarding the withdrawal of the proceeds of financing 5313-IN ("Financing"). This letter ("Disbursement Letter"), as revised from time to time, constitutes the additional instructions.

The attached *World Bank Disbursement Guidelines for Projects*, dated May 1, 2006, ("Disbursement Guidelines") (Attachment 1), are an integral part of the Disbursement Letter. The manner in which the provisions in the Disbursement Guidelines apply to the Financing is specified below. Sections and subsections in parentheses below refer to the relevant sections and subsections in the Disbursement Guidelines and, unless otherwise defined in this letter, the capitalized terms used have the meanings ascribed to them in the Disbursement Guidelines.

I. Disbursement Arrangements

(i) *Disbursement Methods (section 2)*. The following Disbursement Method may be used under the Financing:

- Reimbursement
- Advance

(ii) *Disbursement Deadline Date (subsection 3.7)*. The Disbursement Deadline Date is 4 months after the Closing Date specified in the Financing Agreement. Any changes to this date will be notified by the Association.

II. Withdrawal of Financing Proceeds

(i) *Authorized Signatures (subsection 3.1)*. An authorized signatory letter in the Form attached (Attachment 2) should be furnished to the Association at the address indicated below providing the name(s) and specimen signature(s) of the official(s) authorized to sign Applications:

CREDIT NUMBER 5313-IN

Financing Agreement

(Uttarakhand Disaster Recovery Project)

between

INDIA

and

INTERNATIONAL DEVELOPMENT ASSOCIATION

Dated

January 9, 2014

CREDIT NUMBER 5313-IN

FINANCING AGREEMENT

AGREEMENT dated January 9, 2014 entered into between INDIA ("Recipient") and INTERNATIONAL DEVELOPMENT ASSOCIATION ("Association"). The Recipient and the Association hereby agree as follows:

ARTICLE I — GENERAL CONDITIONS; DEFINITIONS

- 1.01. The General Conditions (as defined in the Appendix to this Agreement) constitute an integral part of this Agreement.
- 1.02. Unless the context requires otherwise, the capitalized terms used in this Agreement have the meanings ascribed to them in the General Conditions or in the Appendix to this Agreement.

ARTICLE II — FINANCING

- 2.01. The Association agrees to extend to the Recipient, on the terms and conditions set forth or referred to in this Agreement, a credit in an amount equivalent to one hundred sixty three million Special Drawing Rights (SDR 163,000,000) (variously, "Credit" and "Financing"), to assist in financing the project described in Schedule 1 to this Agreement ("Project").
- 2.02. The Recipient may withdraw the proceeds of the Financing in accordance with Section IV of Schedule 2 to this Agreement.
- 2.03. The Maximum Commitment Charge Rate payable by the Recipient on the Unwithdrawn Financing Balance shall be one-half of one percent (1/2 of 1%) per annum.
- 2.04. The Service Charge payable by the Recipient on the Withdrawn Credit Balance shall be equal to three-fourths of one percent (3/4 of 1%).
- 2.05. The Interest Charge payable by the Recipient on the Withdrawn Credit Balance shall be equal to one and a quarter percent (1.25%) per annum.
- 2.06. The Payment Dates are April 15 and October 15 in each year.

2.07. The principal amount of the Credit shall be repaid in accordance with the repayment schedule set forth in Schedule 3 to this Agreement.

2.08. The Payment Currency is Dollar.

ARTICLE III — PROJECT

3.01. The Recipient declares its commitment to the objectives of the Project. To this end, the Recipient shall cause the Project to be carried out by the Project Implementing Entity in accordance with the provisions of Article IV of the General Conditions and the Project Agreement.

3.02. Without limitation upon the provisions of Section 3.01 of this Agreement, and except as the Recipient and the Association shall otherwise agree, the Recipient shall ensure that the Project is carried out in accordance with the provisions of Schedule 2 to this Agreement.

ARTICLE IV — EFFECTIVENESS; TERMINATION

4.01. The Effectiveness Deadline is the date ninety (90) days after the date of this Agreement.

4.02. For purposes of Section 8.05 (b) of the General Conditions, the date on which the obligations of the Recipient under this Agreement (other than those providing for payment obligations) shall terminate is twenty (20) years after the date of this Agreement.

ARTICLE V — REPRESENTATIVE; ADDRESSES

5.01. The Recipient's Representative is any of the following officials, acting severally; the Secretary, Additional Secretary, Joint Secretary, Director, Deputy Secretary, or Under Secretary of the Department of Economic Affairs of the Recipient's Ministry of Finance.

5.02. The Recipient's Address is:

Secretary to the Government of India
Department of Economic Affairs
Ministry of Finance
North Block
New Delhi 110 001, India

Facsimile:

+91-11-23094075

5.03. The Association's Address is:

International Development Association
1818 H Street, N.W.
Washington, D.C. 20433
United States of America

Cable:

INDEVAS
Washington, D.C.

Telex:

248423 (MCI)

Facsimile:

1-202-477-6391

AGREED at, New Delhi, India, as of the day and year first above written.

INDIA

By

/s/ Nilaya Mitash

Authorized Representative

Name: _____

Title: Joint Secretary (MI)

INTERNATIONAL DEVELOPMENT
ASSOCIATION

By

/s/

Authorized Representative

Name: _____

Title: _____

SCHEDULE 1

Project Description

The objectives of the Project are to restore housing, rural connectivity and build the resilience of communities in Uttarakhand and increase the technical capacity of state entities to respond promptly and effectively to an Eligible Crisis or Emergency.

The Project consists of the following parts:

Component 1: Resilient Infrastructure Reconstruction

- 1.1 *Resilient Housing:* Construction of about 2,500 multi-hazard resistant houses of Selected Beneficiaries, including the financing of a 10-year insurance coverage therefor, through a combination of conditional cash grants for owner-driven construction and the use of pre-fabricated materials.
- 1.2 *Resilient Public Buildings:* Construction/reconstruction of public buildings totally or partially damaged by the 2013 monsoon floods in accordance with seismic zone and multi-hazard resistance standards, including the provision of equipment and furniture therefor.

Component 2: Rural Road Connectivity

- 2.1 *Rural Roads:* Construction, restoration, realignment and/or upgrading of about 3,600 km of village roads damaged during the 2013 monsoon floods, including the strengthening, repair and/or reconstruction of culverts, bridges, cross drain structures, retaining/breast walls and ancillary Road Furniture.
- 2.2 *Other District Roads:* Construction, restoration, realignment and/or upgrading of about 675 km of Other District Roads damaged during the 2013 monsoon floods, including the strengthening, repair and/or reconstruction of culverts, bridges, cross drain structures, retaining side walls and ancillary Road Furniture.
- 2.3 *Bridle Roads and Bridges:* Construction and/or restoration of about 440 km of bridle roads and about 140 bridle bridges damaged or destroyed during the 2013 monsoon floods.

Component 3: Technical Assistance and Capacity Building for Disaster Risk Management

- 3.1 *Risk Assessment Modeling:* (i) Development and/or establishment of a multi-hazard risk assessment framework for Uttarakhand; (ii) training courses for state officials and technical disaster risk management experts in order to build a local, sustainable risk assessment capacity; (iii) a monitoring and evaluation framework to ensure the appropriate uses of risk assessment information; and (iv)

strengthening of Uttarakhand Space Application Center's institutional capacity to become a key disaster risk management institution.

- 3.2 *Decision Support System*: Establishment of a decision support system in order to integrate, analyze and display information regarding the tracking and reporting of financial and physical progress of the recovery and reconstruction program and performance of grievance redress mechanisms.
- 3.3 *River Morphology Study*: Carrying out of studies on the morphology of rivers that were impacted by the disaster in order to analyze and identify critical protection works needed for river bank strengthening.
- 3.4 *Side Slope Stabilization Study*: (i) Carrying out of studies to determine the scope of the slope stabilization work needed; (ii) implementation of the slope stabilization work recommended therein; and (iii) establishment of a sustainable slope stabilization institutional mechanism.
- 3.5 *Uttarakhand State Disaster Management Authority*: Strengthening the institutional capacity of the Department of Disaster Management by supporting the institutional set-up of the Uttarakhand State Disaster Management Authority.
- 3.6 *Hydro-meteorological Network and Early Warning System*: Assessment of Uttarakhand's hydro-meteorological capability and development of a hydro-meteorological modernization for the state's line agencies; and review and enhancement of Uttarakhand's early warning system, correcting critical gaps and improving emergency preparedness and response by optimizing the use of existing state networks and facilities.
- 3.7 *Strengthening Emergency Response Capacity*: Strengthening the capacity of Uttarakhand's disaster response force, fire services personnel and other immediate response agencies to respond adequately to disaster situation, through the provision of search and rescue equipment and training.

Component 4: Financing Disaster Response Expenses

Procurement of Critical Goods and Non-Consulting Services required or utilized by the Project Implementing Entity to provide urgent disaster response.

Component 5: Implementation Support

Strengthening the institutional capacity of Uttarakhand, in particular the PMU and the PIUs of the Line Departments and Agencies, for the management and implementation of the Project.

Component 6: Contingency Emergency Response

Providing immediate response to an Eligible Crisis or Emergency, as needed.

SCHEDULE 2

Project Execution

Section I. Implementation Arrangements

A. On-lending Arrangements

1. To facilitate the carrying out of the Project, the Recipient shall make the proceeds of the Financing available to the Project Implementing Entity in accordance with the Recipient's standard arrangements for development assistance to the States of India.
2. Notwithstanding paragraph 1 above, in the event that any provision of this Agreement, including the instructions that the Association shall have specified by notice to the Recipient pursuant to Section IV.A.1 of this Schedule, were to be found inconsistent with the Recipient's standard arrangements for development assistance to the States of India, the provisions of this Agreement and related instructions shall govern.
3. The Recipient shall at all times protect its own interests and the interests of the Association to accomplish the purposes of the Financing.

B. Anti-Corruption

The Recipient shall ensure that the Project is carried out in accordance with the provisions of the Anti-Corruption Guidelines.

Section II. Project Monitoring, Reporting and Evaluation

A. Project Reports

The Recipient shall cause the Project Implementing Entity to monitor and evaluate the progress of the Project and prepare Project Reports in accordance with the provisions of Section 4.08 of the General Conditions and on the basis of indicators agreed with the Association. Each Project Report shall cover the period of one (1) calendar quarter, and shall be furnished to the Association not later than sixty (60) days after the end of the period covered by such report.

B. Financial Management, Financial Reports and Audits

1. The Recipient shall maintain or cause to be maintained a financial management system in accordance with the provisions of Section 4.09 of the General Conditions.

2. Without limitation on the provisions of Part A of this Section, the Recipient shall cause the Project Implementing Entity to prepare and furnish to the Recipient and the Association not later than sixty (60) days after the end of each calendar quarter interim financial reports for the Project covering the quarter, in form and substance satisfactory to the Association.
3. The Recipient shall cause the Project Implementing Entity to have its Financial Statements audited in accordance with the provisions of Section 4.09 (b) of the General Conditions. Each audit of the Financial Statements shall cover the period of one (1) fiscal year of the Project Implementing Entity, commencing with the fiscal year in which the first withdrawal was made. The audited Financial Statements for each such period shall be furnished to the Association not later than nine (9) months after the end of such period.

Section III. Procurement

A. General

1. **Goods, Works and Non-consulting Services.** All goods, works and non-consulting services required for the Project and to be financed out of the proceeds of the Financing shall be procured in accordance with the requirements set forth or referred to in Section I of the Procurement Guidelines, and with the provisions of this Section.
2. **Consultants' Services.** All consultants' services required for the Project and to be financed out of the proceeds of the Financing shall be procured in accordance with the requirements set forth or referred to in Sections I and IV of the Consultant Guidelines, and with the provisions of this Section.
3. **Definitions.** The capitalized terms used below in this Section to describe particular procurement methods or methods of review by the Association of particular contracts, refer to the corresponding method described in Sections II and III of the Procurement Guidelines, or Sections II, III, IV and V of the Consultant Guidelines, as the case may be.

B. Particular Methods of Procurement of Goods, Works and Non-consulting Services

1. **International Competitive Bidding.** Except as otherwise provided in paragraph 2 of this Sub-Section III.B and/or sub-section III.D below, goods, works and non-consulting services shall be procured under contracts awarded on the basis of International Competitive Bidding.
2. **Other Methods of Procurement of Goods, Works and Non-consulting Services.** The following methods, other than International Competitive Bidding,

may be used for procurement of goods, works and non-consulting services for those contracts specified in the Procurement Plan: (a) National Competitive Bidding, subject to the additional provisions agreed from time to time in the Procurement Plan; (b) Shopping; (c) Direct Contracting; (d) procurement under Framework Agreements in accordance with procedures which have been found acceptable to the Association Framework Agreement; and (e) Force Account.

C. Particular Methods of Procurement of Consultants' Services

1. **Quality- and Cost-based Selection.** Except as otherwise provided in paragraph 2 of this Sub-Section III.C and/or Sub-Section III.D below, consultants' services shall be procured under contracts awarded on the basis of Quality- and Cost-based Selection.
2. **Other Methods of Procurement of Consultants' Services.** The following methods, other than Quality- and Cost-based Selection, may be used for procurement of consultants' services for those contracts which are specified in the Procurement Plan: (a) Quality-based Selection; (b) Selection based on Consultants' Qualifications; (c) Single-source Selection of consulting firms and Individual Consultants; and (d) Procedures set forth in paragraphs 5.2 and 5.3 of the Consultant Guidelines for the Selection of Individual Consultants.

D. Procurement of Emergency Expenditures under the CER Component of the Project

Notwithstanding any provision to the contrary in this Section, Emergency Expenditures required for each of the CER Component of the Project shall be procured in accordance with the procurement methods and procedures set forth in the CER Operations Manual.

E. Review by the Association of Procurement Decisions

The Procurement Plan shall set forth those contracts which shall be subject to the Association's Prior Review. All other contracts shall be subject to Post Review by the Association.

Section IV. Withdrawal of the Proceeds of the Financing

A. General

1. The Recipient may withdraw the proceeds of the Financing in accordance with the provisions of Article II of the General Conditions, this Section, and such additional instructions as the Association shall specify by notice to the Recipient (including the "World Bank Disbursement Guidelines for Projects" dated May 2006, as revised from time to time by the Association and as made applicable to

this Agreement pursuant to such instructions), to finance Eligible Expenditures as set forth in the table in paragraph 2 below.

2. The following table specifies the categories of Eligible Expenditures that may be financed out of the proceeds of the Financing ("Category"), the allocations of the amounts of the Financing to each Category, and the percentage of expenditures to be financed for Eligible Expenditures in each Category:

Category	Amount of the Financing Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consultants' services, Insurance Premia, Training and Workshops, and Incremental Operating Costs, Housing Sub-grants, Critical Goods and Services, and Rental Assistance for Component 1 through 5 of the Project	163,000,000	100%
(2) Emergency Expenditures for the CER Component	0	100%
TOTAL AMOUNT	163,000,000	

B. Withdrawal Conditions; Withdrawal Period

1. Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made:
- (a) for payments made prior to the date of this Agreement, except that withdrawals up to an aggregate amount not to exceed SDR 20,000,000 equivalent may be made for payments made prior to this date but on or after June 15, 2013, for Eligible Expenditures under Category (1); or
 - (b) under Category (2), unless and until the Association is satisfied, and has notified the Recipient and the Project Implementing Entity of its satisfaction, that all of the following conditions have been met:
 - (i) the Recipient and the Project Implementing Entity have determined that an Eligible Crisis or Emergency has occurred,

have furnished to the Association a request to include certain activities in the CER Component in order to respond to said Eligible Crisis or Emergency, and the Association has agreed with such determination, accepted said request, and notified the Recipient and the Project Implementing Entity thereof;

- (ii) the Project Implementing Entity has prepared and disclosed all safeguard instruments, acceptable to the Association, required for said activities, and has implemented any actions which are required to be taken under said instruments all in accordance with the provisions of Section I.F.1(a)(vi) of the Schedule to the Project Agreement;
- (iii) the Project Implementing Entity has provided sufficient evidence satisfactory to the Association, that the Coordinating Authority has adequate staff and resources in accordance with the provision of Section I.F.2 of the Schedule to the Project Agreement, for the purposes of said activities; and
- (iv) the Project Implementing Entity has adopted a CER Operations Manual in form, substance and manner acceptable to the Association and the provisions of the CER Operations Manual remain -or have been updated in accordance with the provisions of Section I.F.1(a) of the Schedule to the Project Agreement, so as to be- appropriate for the inclusion and implementation of said activities under the respective CER Component.

2. The Closing Date is December 31, 2017.

SCHEDULE 3

Repayment Schedule

Date Payment Due	Principal Amount of the Credit repayable (expressed as a percentage)*
On each April 15 and October 15:	
Commencing April 15, 2019 to and including October 15, 2028	1.65%
Commencing April 15, 2029 to and including October 15, 2038	3.35%

* The percentages represent the percentage of the principal amount of the Credit to be repaid, except as the Association may otherwise specify pursuant to Section 3.03 (b) of the General Conditions.

APPENDIX

Section I. Definitions

1. "Anti-Corruption Guidelines" means the "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and revised in January 2011.
2. "Category" means a category set forth in the table in Section IV of Schedule 2 to this Agreement.
3. "CER Component" means Component 6 of the Project, as described in Schedule 1 to this Agreement.
4. "CER Operations Manual" means the immediate response mechanism operations manuals referred to in Section I.F of the Schedule to the Project Agreement, acceptable to the Association to be adopted by the Project Implementing Entity for the implementation of the CER Component, in accordance with the provision of said Section.
5. "Consultant Guidelines" means the "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011.
6. "Coordinating Authority" means the entity or entities designated by the Project Implementing Entity in the CER Operations Manual, and approved by the Association pursuant to Section I.F.1(a) of the Schedule to the Project Agreement, to be responsible for coordinating their respective CER Component.
7. "Core Committee" means the committee referred to in Section I.A.2.(a) of the Schedule to the Project Agreement, to be established to provide policy guidance for, and exercise general oversight of, the implementation of Project activities.
8. "Critical Goods and Services" means fuel utilized for helicopter rescue missions, the hiring of heavy equipment for clearing of roads to restore immediate connectivity, and/or other expenses agreed from time to time in writing between the Project Implementing Entity and the Association.
9. "Department of Disaster Management" means the department of state of the State of Uttarakhand concerned with the management and mitigation of natural disasters, or any successor thereto.
10. "Disaster Mitigation and Management Center" and the acronym "DMMC" mean the autonomous institute under the aegis of Department of Disaster Management,

which is the apex center in the field of disaster mitigation and management in Uttarakhand, or any successor thereto.

11. "Displaced Persons" means persons who, on account of the execution of the Project, have experienced or would experience direct economic and social impacts caused by: (a) the involuntary taking of land, resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; or (iii) loss of income sources or means of livelihood, whether or not such persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas, resulting in adverse impact on the livelihoods of such persons.
12. "District Level Coordination Unit" means each district committee, referred to in Section I.A.2(e) of the Schedule to the Project Agreement, headed by a magistrate that will coordinate and monitor district level executing agencies in the implementation of the Project, and coordinate with the PIU.
13. "Eligible Crisis or Emergency" means an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact to any of the Project Implementing Entity, associated with a natural or man-made crisis or disaster.
14. "Emergency Expenditures" means any of the eligible expenditures set forth in the CER Operations Manual, in accordance with the provision of Section I.F of the Schedule to the Project Agreement, and required for the activities described in such manual to be financed under the said CER Component.
15. "ESMF" means the Project Implementing Entity's environmental and social management framework disclosed by Uttarakhand on September 18, 2013, setting forth the guiding principles, standards and procedures for: (a) the screening of Project activities and the identification of any adverse or positive environmental impacts caused, or expected to be caused, on account of their implementation; and (b) the preparation of their prescribed environmental impact assessments and environmental management plans, social impact assessments and social management plans, and resettlement action plans for Displaced Persons; as such framework may be revised, updated or supplemented from time to time with the prior written concurrence of the Association.
16. "GAAP" means the Project Implementing Entity's governance and accountability action plan dated October 4, 2013, for purposes of the Project; which plan sets out the key actions to be undertaken by the Project Implementing Entity to strengthen governance, transparency and accountability under the Project; as such action plan may be revised, updated or supplemented, from time to time, with the prior written concurrence of the Association.

17. "General Conditions" means the "International Development Association General Conditions for Credits and Grants", dated July 31, 2010, with the modifications set forth in Section II of this Appendix.
18. "High Powered Committee for Sanctioning of Post Disaster Reconstruction Works" means the committee referred to in Section I.A.2 (b) of the Schedule to the Project Agreement.
19. "Housing Sub-grant" means each conditional cash grant to be provided by the PMU to Selected Beneficiaries in various installments, for up to the amount of five hundred thousand Indian Rupees (INR500,000), or any other amount established from time to time in the Operations Manual, subject to the terms and conditions set out in Section I.D.2 of the Schedule to the Project Agreement, and the verification of the achievement of the housing construction milestones, as set forth in the Operations Manual; and "Housing Sub-grants" means more than one Housing Sub-grant.
20. "Incremental Operating Costs" means the reasonable costs of incremental expenditures incurred by the Project Implementing Entity on account of Project implementation, management and monitoring, including, *inter alia*: (i) costs of incremental contractual staff salaries (other than consultants) and civil servants deputed to the Project; (ii) dissemination of Project related information; (iii) office rental and leasing operation and maintenance of equipment; (iv) office supplies and utilities; (v) travel and boarding/lodging allowances; (vi) leasing, operation and maintenance of vehicles; (vii) advertising and communication expenses; and (viii) bank charges.
21. "Insurance Premia" means the reasonable amount paid by the Project Implementing Entity for the insurance coverage for up to ten (10) years of the resilient houses (excluding assets within) reconstructed under Component 1.1. of the Project.
22. "Line Departments and Agencies" means PWD, USIDC, USDMA, and USAC.
23. "Operations Manual" means the manual dated October 4, 2013 prepared and adopted by the Project Implementing Entity, setting forth guidelines and procedures for the implementation of the Project, including: (i) the allocation of functions, powers and responsibilities between the Steering Committee, the USDMA, the PMU and the Line Departments and Agencies, for Project implementation; (ii) the financial management arrangements consistent with Section II of Schedule 2 to this Agreement; (iii) the eligibility criteria for Selected Beneficiaries and the amounts and terms and conditions of the Housing Sub-grants ("*Policy Document for Housing Reconstruction*"); (iv) the key action to be undertaken by the various implementation units and the Line Departments and Agencies in order to strengthen/ensure their governance and accountability;

- (v) the monitoring and evaluation framework for Project activities; and (vi) design and technical standards for resilient housing, resilient public buildings, village roads, Other District Roads and bridge roads and bridges to be constructed/reconstructed under the Project, as said manual may be amended from time to time with the prior concurrence of the Association.
24. "Other District Roads" means link roads between village roads and major district roads, to be constructed, restored, realigned or graded under Sub-component 2.2 of the Project.
25. "Project Implementation Units" and the acronym "PIUs" mean each of the project implementation units referred to in Section I.A.2(d) of the Schedule to the Project Agreement.
26. "Procurement Guidelines" means the "Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011.
27. "Procurement Plan" means the Recipient's simplified procurement plan for the Project, dated October 4, 2013 and referred to in paragraph 1.18 of the Procurement Guidelines and paragraph 1.25 of the Consultant Guidelines, as the same shall be updated from time to time in accordance with the provisions of said paragraphs.
28. "Project Implementing Entity" means Uttarakhand.
29. "Project Management Unit" and the acronym "PMU" mean the project management unit referred to in Section I.A.2(c) of the Schedule to the Project Agreement.
30. "PWD" means the Project Implementing Entity's Public Works Department or any successor thereto.
31. "Rental Assistance" means the rental allowance in the amount of INR3,000 per household, per month, paid by Uttarakhand to Selected Beneficiaries under Component 1.1. of the Project, commencing on June 15, 2013 and for a duration not to exceed the earlier of: (i) two years from that date; or (ii) the completion of the housing re-construction for the respective Selected Beneficiary, all in accordance with the provisions of the Operations Manual.
32. "Road Furniture" means ancillary road signage, safety and traffic management features such as signboards, speed breakers, delineators, pillar lights, semaphores, road curbstones, pavestones, phone booths, and disaster mitigation/accident information systems, or such other items ancillary to Project

roads as the Project Implementing Entity and the Association may agree in writing from time to time.

33. "Safeguard Documents" means collectively, the ESMF and the environmental assessments, environmental management plans, social assessments, social management plans, resettlement action plans for Displaced Persons and other documents (to be) prepared, disclosed and implemented pursuant to Section I.E.2. of the Schedule to the Project Agreement.
34. "Selected Beneficiary" means each beneficiary of a Housing Sub-grant referred to in Section I.A.2 (e) of the Project Agreement and selected by the District Level Coordination Unit in which such beneficiary resides pursuant to the criteria set out in the Operations Manual, and "Selected Beneficiaries" means more than one Selected Beneficiary.
35. "Training and Workshops" means the reasonable costs of training and workshops incurred by the Project Implementing Entity on account of Project implementation, including *inter alia*: (i) study tours, courses, conferences and workshops conducted and/or attended by staff of the Project Implementing Entities and/or stakeholders in the territory of the Recipient or, subject to the prior no-objection of the Association, overseas, including the purchase and publication of materials, rental of facilities, course fees, and lodging, travel expenses and per diems for trainers and/or trainees.
36. "Uttarakhand" means the Recipient's State of Uttarakhand formed and recognized pursuant to the Recipient's Uttar Pradesh Reorganisation Act of 2000.
37. "Uttarakhand Space Application Center" and the acronym "USAC" means the Uttarakhand's remote sensing agency, referred to in Sub-component 3.1 of the Project, or any successor thereto.
38. "Uttarakhand State Disaster Management Authority" and the acronym "USDMA" mean the authority established by Uttarakhand by the Disaster Management Act of 2005, to be vested with the responsibility for the overall coordination of Project activities by the Project Implementing Entity, or any successor thereto.
39. "Uttarakhand State Infrastructure Development Corporation" and the acronym "USIDC" means the main construction agency of Uttarakhand, the implementing agency for Component 1 of the Project, or any successor thereto.

Section II. Modifications to the General Conditions

The modifications to the General Conditions are as follows:

1. Section 3.02 is modified to read as follows:

"Section 3.02. Service Charge and Interest Charge

- (a) *Service Charge.* The Recipient shall pay the Association a service charge on the Withdrawn Credit Balance at the rate specified in the Financing Agreement. The Service Charge shall accrue from the respective dates on which amounts of the Credit are withdrawn and shall be payable semi-annually in arrears on each Payment Date. Service Charges shall be computed on the basis of a 360-day year of twelve 30-day months.
 - (b) *Interest Charge.* The Recipient shall pay the Association interest on the Withdrawn Credit Balance at the rate specified in the Financing Agreement. Interest shall accrue from the respective dates on which amounts of the Credit are withdrawn and shall be payable semi-annually in arrears on each Payment Date. Interest shall be computed on the basis of a 360-day year of twelve 30-day months."
2. Paragraph 28 of the Appendix ("Financing Payment") is modified by inserting the words "the Interest Charge" between the words "the Service Charge" and "the Commitment Charge".
3. The Appendix is modified by inserting a new paragraph 32 with the following definition of "Interest Charge", and renumbering the remaining paragraphs accordingly:

"32. "Interest Charge" means the interest charge specified in the Financing Agreement for the purpose of Section 3.02(b)."
4. Renumbered paragraph 37 (originally paragraph 36) of the Appendix ("Payment Date") is modified by inserting the words "Interest Charges" between the words "Service Charges" and "Commitment Charges".
5. Renumbered paragraph 50 (originally paragraph 49) of the Appendix ("Service Charge") is modified by replacing the reference to Section 3.02 with Section 3.02 (a).

LOAN NUMBER 89210-IN

Project Agreement

(Additional Financing for Uttarakhand Disaster Recovery Project)

between

**INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT**

and

STATE OF UTTARAKHAND

PROJECT AGREEMENT

AGREEMENT between INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT ("Bank") and STATE OF UTTARAKHAND ("Project Implementing Entity") ("Project Agreement") in connection with the Loan Agreement ("Loan Agreement") of the Signature Date between India ("Borrower") and the Bank. The Bank and the Project Implementing Entity hereby agree as follows:

ARTICLE I — GENERAL CONDITIONS; DEFINITIONS

- 1.01. The General Conditions (as defined in the Appendix to the Loan Agreement) apply to and form part of this Agreement.
- 1.02. Unless the context requires otherwise, the capitalized terms used in this Agreement have the meanings ascribed to them in the Loan Agreement or the General Conditions.

ARTICLE II — PROJECT

- 2.01. The Project Implementing Entity declares its commitment to the objectives of the Project. To this end, the Project Implementing Entity shall carry out the Project, all in accordance with the provisions of Article V of the General Conditions and the Schedule to this Agreement, and shall provide, promptly as needed, the funds, facilities, services and other resources required for the Project.

ARTICLE III — REPRESENTATIVE; ADDRESSES

- 3.01. The Project Implementing Entity's Representative is the Chief Secretary or Additional Chief Secretary of Uttarakhand.
- 3.02. For purposes of Section 10.01 of the General Conditions:

(a) the Bank's address is:

International Bank for Reconstruction and Development
1818 H Street, N.W.
Washington, D.C. 20433
United States of America; and

(b) the Bank's Electronic Address is:

Telex:	Facsimile:
248423(MCI) or 64145(MCI)	1-202-477-6391

- 3.03. For purposes of Section 10.01 of the General Conditions:

(a) the Project Implementing Entity's address is:

Secretariat
4 Subhash Road
Dehradun
Uttarakhand
PIN 248 001; and

(b) the Project Implementing Entity's Electronic Address is:

Facsimile:

+91 (135) 271-2098

AGREED, as of the latest of the two dates written below.

**INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT**

By



Authorized Representative

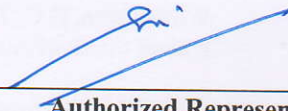
Name: HISHAM ABDO

Title: ACTING COUNTRY DIRECTOR, INDIA

Date: MARCH 5, 2019

STATE OF UTTARAKHAND

By



Authorized Representative

Name: AMIT SINGH NEGI

Title: SECRETARY FINANCE AND DISASTER
MANAGEMENT

Date: MARCH 5, 2019

SCHEDULE

Section I. Implementation Arrangements

A. Implementation Arrangements

The Project Implementing Entity shall vest the responsibility for the overall coordination of Project activities in USDMA. Notwithstanding the afore-mentioned, the Project Implementing Entity shall maintain, during the period of implementation of the Project, the Core Committee, High Powered Committee for Sanctioning of Post Disaster Reconstruction Works, the Project Management Unit, the Project Implementation Units and the District Level Coordination Units set forth in Section I.A.2 of the Schedule to the Original Project Agreement. Unless the context requires otherwise, the term "Association" in the definitions of the aforementioned entities shall be read as "Bank".

B. Project Documents

The Project Implementing Entity shall:

- (a) implement the Project in accordance with the Operations Manual, the Safeguard Documents and the GAAP; provided however, that in the event of conflict between the provisions of said manual, plan or documents, on the one hand, and those of this Agreement and/or the Loan Agreement, on the other hand, the provisions of this Agreement and/or the Loan Agreement shall prevail; and
- (b) refrain from amending, suspending, waiving, and/or voiding any provision of the Operations Manual and/or the GAAP, whether in whole or in part, without the prior written concurrence of the Bank.

C. Safeguards

1. The Project Implementing Entity shall:

- (a) carry out the Project in accordance/compliance with the ESMF and the instruments (to be) prepared pursuant to paragraph 2 of this Sub-Section, and pursuant to the objectives, policies, procedures, compensation arrangements and other provisions set forth therein, in a manner and substance satisfactory to the Bank (the "Safeguard Documents"); and
- (b) refrain from taking any action, or consenting to an action to be taken, which would prevent or interfere with the implementation of the Safeguard Documents, including any amendment, suspension, waiver, and/or voidance of any provision thereof, whether in whole or in part, without the prior written concurrence of the Bank.

2. The Project Implementing Entity shall refrain from inviting bids or selecting any contractors or undertaking any other preparatory works, until and unless:

- (a) the respective Line Departments and Agencies implementing such works or activities have: (i) carried out a social and environmental screening thereof, in accordance with the guidelines, standards and procedures set forth in the ESMF; and (ii) produced the respective screening report;
 - (b) if the screening reports so require, the necessary environmental assessments, environmental management plans, social assessments, social management plans and resettlement action plans for Displaced Persons ("Safeguard Documents"), as the case may be, has/have been prepared in a manner and substance satisfactory to the Bank, pursuant to the ESMF; and
 - (c) the foregoing Safeguard Documents have been publicly disclosed by the Project Implementing Entity, in local language(s) at the Project sites, at least fifteen (15) days prior to the respective bidding invitations or the initiation of any contractor selection process for the related works.
- 3. The Project Implementing Entity shall, by no later than forty-five (45) days after the end of each calendar semester, furnish to the Bank, for its records and public disclosure, a compilation of all the social and environmental screening reports prepared by the Line Departments and Agencies pursuant to paragraph 2(a) of this Section I.C during such calendar semester.
- 4. The Project Implementing Entity shall ensure that, prior to commencing any civil works under the Project:
 - (a) all necessary governmental permits and clearances for such civil works shall have been obtained from the competent governmental authority/ies;
 - (b) all pre-construction conditions imposed by the governmental authority/ies under such permit(s) or clearance(s) shall have been complied with/fulfilled; and
 - (c) all resettlement measures set forth in the applicable resettlement action plans prepared pursuant to paragraph 2(b) of this Section I.C, shall have been fully executed, including the full payment of compensation prior to displacement and/or the provision of relocation assistance to all Displaced Persons, as per the entitlements provided in the ESMF and/or the resettlement action plans.
- 5. The Project Implementing Entity shall ensure that each contract under the Project includes the obligation of the relevant contractor to comply with the relevant Safeguard Documents applicable to the respective activities commissioned/awarded pursuant to said contract.
- 6. The Project Implementing Entity shall, throughout the period of implementation of the Project: (a) maintain monitoring and evaluation protocols and record keeping procedures acceptable to the Bank and adequate to enable the Project Implementing Entity and the Bank to supervise and assess, on an on-going basis, the implementation of/compliance with the Safeguard Documents, as well as the achievement of the objectives thereof; and (b) furnish to the Bank quarterly reports on the general compliance with the Safeguard Documents, the social and environmental impact of Project activities, and the results of the

mitigation or benefit-enhancing measures applied thereto, during the period preceding the date of each such report.

7. The Project Implementing Entity shall ensure that the following Project expenditures are financed exclusively out of the Project Implementing Entity's own resources, and, to this end, shall provide, as promptly as needed, the resources required therefor, namely:
 - (a) all land acquisition required for the purpose of the Project; and
 - (b) any compensation, resettlement and rehabilitation assistance or payments to Displaced Persons in accordance with the provision of the applicable resettlement action plans.
8. In the event of any conflict between the provisions of any of the Safeguard Documents, on the one hand, and the provisions of this Agreement and/or the Loan Agreement, on the other hand, the provisions of this Agreement and/or the Loan Agreement shall prevail.

D. Contingent Emergency Response Mechanism

1. In order to ensure proper implementation of the Component 6 of the Project ("CER Component"), the Project Implementing Entity shall:
 - (a) prepare and furnish to the Bank an operations manual (the "CER Operations Manual") which shall set forth detailed implementation arrangements for the CER Component, including: (i) designation of terms of reference for, and resources to be allocated to, the entity to be responsible for the coordination and implementation of the CER Component (the "Coordinating Authority"); (ii) specific activities which may be included in the CER Component, and any procedures for such inclusion; (iii) financial management arrangements for the CER Component; (iv) procurement methods and procedures for Emergency Expenditures to be financed under the CER Component; (v) documentation required for withdrawals of Emergency Expenditures; (vi) environmental and social safeguards instruments, including management frameworks, assessments and/or plans for the CER Component consistent with the Bank's policies on the matter; and (vii) any other arrangements necessary to ensure proper coordination and implementation of the CER Component;
 - (b) afford the Bank a reasonable opportunity to review said proposed CER Operations Manual;
 - (c) promptly adopt the CER Operations Manual for the CER Component as shall have been approved by the Bank;
 - (d) ensure that the CER Component is carried out in accordance with the CER Operations Manual, provided however that in the event of any inconsistency between any of the provisions of the CER Operations Manual and those of this Agreement and/or the Loan Agreement, the provisions of this Agreement and/or the Loan Agreement shall prevail; and

- (e) not amend, suspend, abrogate, repeal or waive, whether in whole or in part, any provision of the CER Operations Manual without the prior approval by the Bank.
- 2. The Project Implementing Entity shall, throughout the period of implementation of the CER Component, maintain the Coordinating Authority, with adequate staff and resources satisfactory to the Bank.
- 3. The Project Implementing Entity shall undertake no activities under the CER Component (and no activities shall be included in the CER Component) unless and until the following conditions have been met in respect of said activities:
 - (a) (i) the Borrower and the Project Implementing Entity have determined that an Eligible Crisis or Emergency has occurred; (ii) the Project Implementing Entity has furnished to the Bank a request to include said activities in the CER Component in order to respond to said Eligible Crisis or Emergency, and (iii) the Bank has agreed with such determination, accepted said request and notified the Borrower and the Project Implementing Entity thereof; and
 - (b) the Project Implementing Entity has prepared and disclosed all safeguards instruments required for said activities, in accordance with the CER Operations Manual, the Bank has approved all such instruments, and the Project Implementing Entity has implemented all actions which are required to be taken under said instruments prior to the commencement of such activities.

Section II. Project Monitoring, Reporting and Evaluation

A. Project Reports

The Project Implementing Entity shall monitor and evaluate the progress of the Project and prepare Project Reports in accordance with the provisions of Section 5.08 (b) of the General Conditions and on the basis of indicators agreed with to the Bank. Each such Project Report shall cover the period of one (1) calendar quarter, and shall be furnished to the Borrower and the Bank not later than sixty (60) days after the end of the period covered by such report.

Section III. Other Undertakings

The Project Implementing Entity shall:

- (a) maintain throughout the period of implementation of the Project, a fully operational procurement documentation and record keeping system, in a manner and substance acceptable to the Bank, including a freely and publicly accessible database, showing the procurement plans and procurement notices, invitations to bid, bidding documents and requests for proposals, as well as the procurement status of various contracts, including short lists of consultants, contract awards and the complaints received and the actions taken in respect thereof. The Project

implementing entity shall update such details on a monthly basis throughout the period of implementation of the Project; and

- (b) maintain throughout the period of implementation of the Project, a system for the handling of procurement complaints, in a manner and substance acceptable to the Bank, which system shall include, *inter alia*: (i) a second-tier appeal system; and (ii) a complaint database with an interface (link) to the management information systems, providing free and public access for the submission of electronic claims. Notwithstanding the foregoing, for any procurement done through International Competitive Bidding, the Bank's prescript complaint redress mechanism shall apply.

LOAN NUMBER 89210-IN

Loan Agreement

(Additional Financing for Uttarakhand Disaster Recovery Project)

between

INDIA

and

**INTERNATIONAL BANK FOR RECONSTRUCTION
AND DEVELOPMENT**

LOAN AGREEMENT

Agreement dated as of the Signature Date, between INDIA ("Borrower") and INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT ("Bank"). The Borrower and the Bank hereby agree as follows:

ARTICLE I — GENERAL CONDITIONS; DEFINITIONS

- 1.01. The General Conditions (as defined in the Appendix to this Agreement) apply to and form part of this Agreement.
- 1.02. Unless the context requires otherwise, the capitalized terms used in this Agreement have the meanings ascribed to them in the General Conditions, the Original Financing Agreement (as defined in the Appendix to this Agreement) and/or the Appendix to this Agreement.

ARTICLE II — LOAN

- 2.01. The Bank agrees to lend to the Borrower the amount of ninety six million United States dollars (USD 96,000,000), as such amount may be converted from time to time through a Currency Conversion ("Loan"), to assist in financing the sub-Component 1.2 and Components 2, 3, 5 and 6 of the Original Project, described in Schedule 1 of the Original Financing Agreement, as amended (the "Project").
- 2.02. The Borrower may withdraw the proceeds of the Loan in accordance with Section IV of Schedule 2 to this Agreement.
- 2.03. The Front-end Fee is one quarter of one percent (0.25%) of the Loan amount.
- 2.04. The Commitment Charge is one quarter of one percent (0.25%) per annum on the Unwithdrawn Loan Balance.
- 2.05. The interest rate is the Reference Rate plus the Variable Spread or such rate as may apply following a Conversion; subject to Section 3.02(e) of the General Conditions.
- 2.06. The Payment Dates are May 1 and November 1 in each year.
- 2.07. The principal amount of the Loan shall be repaid in accordance with Schedule 3 to this Agreement.
- 2.08. (a) If on any given day, the Total Exposure exceeds the Standard Exposure Limit (as said terms are defined in sub-paragraphs (b)(ii) and (b)(iii) of this Section), the Borrower shall pay to the Bank a surcharge at the rate of one half of one percent (0.5%) per annum of the Allocated Excess Exposure Amount (as defined in sub-paragraph (b)(i) of this Section) for each said day ("Exposure Surcharge"). The Exposure Surcharge (if any) shall be payable semi-annually in arrears on each Payment Date.

(b) For purposes of this Section the following terms have the meanings set forth below:

- (i) "Allocated Excess Exposure Amount" means for each day during which the Total Exposure exceeds the Standard Exposure Limit, the product of: (A) the total amount of said excess; and (B) the ratio of all (or, if the Bank so determines, a portion) of the Loan to the aggregate amount of all (or the equivalent portions) of the loans made by the Bank to the Borrower, and to other borrowers guaranteed by the Borrower that are also subject to an exposure surcharge, as said excess and ratio are reasonably determined from time to time by the Bank.
- (ii) "Standard Exposure Limit" means the standard limit on the Bank's financial exposure to the Borrower which, if exceeded, would subject the Loan to the Exposure Surcharge, as determined from time to time by the Bank.
- (iii) "Total Exposure" means for any given day, the Bank's total financial exposure to the Borrower, as reasonably determined by the Bank.

ARTICLE III — PROJECT

- 3.01. The Borrower declares its commitment to the objectives of the Project. To this end, the Borrower shall cause the Project to be carried out by the Project Implementing Entity in accordance with the provisions of Article V of the General Conditions, Schedule 2 to this Agreement and the Schedule to the Project Agreement.

ARTICLE IV — EFFECTIVENESS; TERMINATION

- 4.01. The Effectiveness Deadline is the date ninety (90) days after the Signature Date.

ARTICLE V — REPRESENTATIVE; ADDRESSES

- 5.01. The Borrower's Representative is any of the following officials, acting severally; the Secretary, Additional Secretary, Joint Secretary, Director, Deputy Secretary, or Under Secretary of the Department of Economic Affairs of the Borrower's Ministry of Finance.
- 5.02. For purposes of Section 10.01 of the General Conditions:

- (a) the Borrower's address is:

Secretary to the Government of India
Department of Economic Affairs
Ministry of Finance
North Block
New Delhi 110 001, India; and

- (b) the Borrower's Electronic Address is:

Facsimile:	E-mail:
+91-11-23094075	secy-dea@nic.in

5.03. For purposes of Section 10.01 of the General Conditions:

(a) the Bank's address is:

International Bank for Reconstruction and Development
1818 H Street, N.W.
Washington, D.C. 20433
United States of America; and

(b) the Bank's Electronic Address is:

Telex:

Facsimile:

248423(MCI) or
64145(MCI)

1-202-477-6391

AGREED as of the Signature Date.

INDIA

By /s/ SAMEER KUMAR KHARE

Authorized Representative

Name: SAMEER KUMAR KHARE

Title: ADDITIONAL SECRETARY

Date: MARCH 5, 2019

INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT

By /s/ HISHAM ABDO

Authorized Representative

Name: HISHAM ABDO

Title: ACTING COUNTRY DIRECTOR, INDIA

Date: MARCH 5, 2019

SCHEDULE 1

Project Description

The objectives of the Project are the same as the ones set forth in the Original Project, which are to restore housing, rural connectivity and build the resilience of communities in Uttarakhand and increase the technical capacity of state entities to respond promptly and effectively to an Eligible Crisis or Emergency.

The Project consists of sub-Components 1.2 and Components 2, 3, 5 and 6 of the Original Project, as amended

SCHEDULE 2

Project Execution

Section I. Implementation Arrangements

A. On-lending Arrangements

1. To facilitate the carrying out of the Project, the Borrower shall make the proceeds of the Loan available to the Project Implementing Entity in accordance with the Borrower's standard arrangements for development assistance to the States of India.
2. Notwithstanding paragraph 1 above, in the event that any provision of this Agreement, including the instructions that the Bank shall have specified by notice to the Borrower pursuant to Section 2.01(b) of the General Condition (including the Disbursement and Financial Information Letter), were to be found inconsistent with the Borrower's standard arrangements for development assistance to the States of India, the provisions of this Agreement and related instructions shall prevail.
3. The Borrower shall at all times protect the interests of the Bank to accomplish the purposes of the Loan.

Section II. Project Monitoring Reporting and Evaluation

The Borrower shall cause the Project Implementing Entity to furnish to the Bank each Project Report not later than sixty (60) days after the end of each calendar quarter, covering the calendar quarter.

Section III. Procurement of Emergency Expenditures under the CER Component of the Project

Emergency Expenditures required for the CER Component of the Project shall be procured in accordance with the procurement methods and procedures set forth in the CER Operations Manual.

Section IV. Withdrawal of Loan Proceeds

A. General

1. Without limitation upon the provisions of Article II of the General Conditions and in accordance with the Disbursement and Financial Information Letter, the Borrower may withdraw the proceeds of the Loan to: (a) finance Eligible Expenditures; (b) pay: (i) the Front-end Fee; and (ii) Interest Rate Cap or Interest Rate Collar premium; in the amount allocated and, if applicable, up to the percentage set forth against each Category of the following table:

Category	Amount of the Loan Allocated (expressed in USD)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Training and Workshops and Incremental Operating Costs for sub-Components 1.2 and Components 2, 3 and 5 of the Original Project (as amended)	95,760,000	80%
(2) Emergency Expenditures for the CER Component (i.e. Component 6 of the Original Project)	0	100%
(3) Front-end Fee	240,000	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
(4) Interest Rate Cap or Interest Rate Collar premium	0	Amount due pursuant to Section 4.05 (c) of the General Conditions
TOTAL AMOUNT	96,000,000	

B. Withdrawal Conditions; Withdrawal Period

1. Notwithstanding the provisions of paragraph 1 above, no withdrawal shall be made:

- (a) for payments made prior to the Signature Date, except that withdrawals up to an aggregate amount not to exceed USD 19,200,000 may be made for payments made prior to this date but on or after August 1, 2018, for Eligible Expenditures; and
- (b) under Category (2), unless and until the Bank is satisfied, and has notified the Borrower and the Project Implementing Entity of its satisfaction, that the following conditions have been met:
 - (i) the Borrower and the Project Implementing Entity have determined that an Eligible Crisis or Emergency has occurred, have furnished to the Bank

a request to include certain activities in the CER Component in order to respond to said Eligible Crisis or Emergency, and the Bank has agreed with such determination, accepted said request, and notified the Borrower and the Project Implementing Entity thereof;

- (ii) the Project Implementing Entity has prepared and disclosed all safeguard instruments, acceptable to the Bank, required for said activities, and has implemented any actions which are required to be taken under said instruments, all in accordance with the provisions of Section I.D.1(a)(vi) of the Schedule to the Project Agreement;
- (iii) the Project Implementing Entity has provided sufficient evidence satisfactory to the Bank, that the Coordinating Authority has adequate staff and resources in accordance with the provision of Section I.D.2 of the Schedule to the Project Agreement, for the purposes of said activities; and
- (iv) the Project Implementing Entity has adopted a CER Operations Manual in form, substance and manner acceptable to the Bank and the provisions of the CER Operations Manual remain –or have been updated in accordance with the provisions of Section I.D.1(a) of the Schedule to the Project Agreement, so as to be– appropriate for the inclusion and implementation of said activities under the respective CER Component.

2. The Closing Date is March 31, 2022.

SCHEDULE 3

Commitment-Linked Amortization Repayment Schedule

The following table sets forth the Principal Payment Dates of the Loan and the percentage of the total principal amount of the Loan payable on each Principal Payment Date ("Installment Share").

Level Principal Repayments

Principal Payment Date	Installment Share
On each May 1 and November 1 Beginning May 1, 2024 through November 1, 2033	5%

APPENDIX

Section I. Definitions

1. "Anti-Corruption Guidelines" means, for purposes of paragraph 5 of the Appendix to the General Conditions, the "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and revised in January 2011 and as of July 1, 2016.
2. "Category" means a category set forth in the table in Section IV of Schedule 2 to this Agreement.
3. "CER Component" means Component 6 of the Original Project, as described in Schedule 1 to the Original Financing Agreement.
4. "CER Operations Manual" means the immediate response mechanism operations manuals referred to in Section I.D of the Schedule to the Project Agreement, acceptable to the Bank to be adopted by the Project Implementing Entity for the implementation of the CER Component, in accordance with the provision of said Section.
5. "Component" means each of the parts singled out as Components 1 through 6, in the description of the Original Project, as amended.
6. "Coordinating Authority" means the entity or entities designated by the Project Implementing Entity in the CER Operations Manual, and approved by the Bank pursuant to Section I.D.1(a) of the Schedule to the Project Agreement, to be responsible for coordinating their respective CER Component.
7. "Core Committee" means the committee referred to in Section I.A.2.(a) of the Schedule to the Original Project Agreement.
8. "Displaced Persons" means persons who, on account of the execution of the Project, have experienced or would experience direct economic and social impacts caused by: (a) the involuntary taking of land, resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; or (iii) loss of income sources or means of livelihood, whether or not such persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas, resulting in adverse impact on the livelihoods of such persons.
9. "District Level Coordination Unit" means each district committee, referred to in Section I.A.2(e) of the Schedule to the Original Project Agreement.
10. "Eligible Crisis or Emergency" means an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact in Uttarakhand, associated with a natural or man-made crisis or disaster.
11. "Emergency Expenditures" means any of the eligible expenditures set forth in the CER Operations Manual, in accordance with the provision of Section I.D of the Schedule to the

Project Agreement, and required for the activities described in such manual to be financed under the said CER Component.

12. "ESMF" means the Project Implementing Entity's environmental and social management framework for the Original Project, disclosed by Uttarakhand on September 18, 2013 and re-disclosed on January 20, 2018; as such framework may be revised, updated or supplemented from time to time with the prior written concurrence of the Bank.
13. "GAAP" means the Project Implementing Entity's governance and accountability action plan for the Original Project dated October 4, 2013, and updated on December 18, 2018; as such action plan may be revised, updated or supplemented, from time to time, with the prior written concurrence of the Bank.
14. "General Conditions" means the "International Bank for Reconstruction and Development General Conditions for IBRD Financing, Investment Project Financing", dated July 14, 2017.
15. "High Powered Committee for Sanctioning of Post Disaster Reconstruction Works" means the committee referred to in Section I.A.2(b) of the Schedule to the Original Project Agreement.
16. "Incremental Operating Costs" means the reasonable costs of incremental expenditures incurred by the Project Implementing Entity on account of Project implementation, management and monitoring, including, *inter alia*: (i) costs of incremental contractual staff salaries (other than consultants) and civil servants deputed to the Project; (ii) dissemination of Project related information; (iii) office rental and leasing operation and maintenance of equipment; (iv) office supplies and utilities; (v) travel and boarding/lodging allowances; (vi) leasing, operation and maintenance of vehicles; (vii) advertising and communication expenses; and (viii) bank charges.
17. "Line Departments and Agencies" means, collectively, Uttarakhand's Public Works Department, the Uttarakhand State Infrastructure Development Corporation, the USDMA, and the Uttarakhand Space Application Center.
18. "Operations Manual" means the Project Implementing Entity's manual for the Original Project dated October 4, 2013, and updated on December 18, 2018; as said manual may be amended from time to time with the prior concurrence of the Bank.
19. "Original Financing Agreement" means the agreement between the Borrower and the International Development Association for the financing of the Original Project, dated January 9, 2014 (Credit No.5313-IN), as amended from time to time.
20. "Original Project" means the Project described in Schedule 1 to the Original Financing Agreement, as amended from time to time.
21. "Original Project Agreement" means the agreement between the International Development Association and Uttarakhand for the implementation of the Original Project, dated January 9, 2014, as amended from time to time.

22. "Procurement Regulations" means, for purposes of paragraph 85 of the Appendix to the General Conditions, the "World Bank Procurement Regulations for Borrowers under Investment Project Financing", dated July 1, 2016 and revised in November 2017.
23. "Project Implementation Units" mean collectively the project implementation units referred to in Section I.A.2(d) of the Schedule to the Original Project Agreement.
24. "Project Implementing Entity" means the State of Uttarakhand (also referred as Uttarakhand).
25. "Project Management Unit" and the acronym "PMU" mean the project management unit referred to in Section I.A.2(c) of the Schedule to the Original Project Agreement.
26. "Safeguard Documents" means collectively, the ESMF and the environmental assessments, environmental management plans, social assessments, social management plans, resettlement action plans for Displaced Persons and other documents (to be) prepared, disclosed and implemented pursuant to Section I.C.2. of the Schedule to the Project Agreement.
27. "Signature Date" means the latest of the two dates on which the Borrower and the Bank signed this Agreement and such definition applied to all references to "the date of the Loan Agreement" in the General Conditions.
28. "Training and Workshops" means the reasonable costs of training and workshops incurred by the Project Implementing Entity on account of Project implementation, including *inter alia*: (i) study tours, courses, conferences and workshops conducted and/or attended by staff of the Project Implementing Entity and/or stakeholders in the territory of the Borrower or, subject to the prior no-objection of the Bank, overseas, including the purchase and publication of materials, rental of facilities, course fees, and lodging, travel expenses and per diems for trainers and/or trainees.
29. "Uttarakhand" means the Borrower's State of Uttarakhand formed and recognized pursuant to the Borrower's Uttar Pradesh Reorganization Act of 2000.
30. "Uttarakhand State Disaster Management Authority" and the acronym "USDMA" mean the authority established by Uttarakhand by the Disaster Management Act of 2005, to be vested with the responsibility for the overall coordination of Project activities by the Project Implementing Entity, or any successor thereto.

March 5, 2019

Mr. Sameer Kumar Khare
Additional Secretary (MI)
Department of Economic Affairs
Ministry of Finance
Room No. 39-B, North Block
New Delhi 110-001

***Re: INDIA: Credit Number 5313-IN
Uttarakhand Disaster Recovery Project
Letter of Amendment to the Credit Agreement to include new activities on
account of the Additional Financing (Loan 89210-IN)***

Dear Mr. Khare:

1. We refer to the Financing Agreement ("Financing Agreement") between India (the "Recipient") and the International Development Association (the "Association"), dated January 9, 2014 for the Uttarakhand Disaster Recovery Project ("Project"), pursuant to which the Association extended the above captioned loan ("Loan").
2. In addition, we also refer to the additional loan in the amount of ninety six million (USD 96,000,000) (Loan No 89210-IN) extended to the Recipient by the International Bank for Reconstruction and Development (the "Bank") as additional financing for additional activities under the Project (the "Additional Financing").
3. We are pleased to inform that, pursuant to the approval of the Additional Financing by the Bank's Board of Executive Directors, the Association hereby proposes to amend the Financing Agreement as follows:
 - (a) Component 2 in Schedule 1 to the Financing Agreements is amended to include the following additional activities:
 - "2.4. Reconstruction of about sixty-four (64) bridges which are damaged to the point of needing replacement; and/or no longer in use due to their damage or total collapse.
 - 2.5. Carrying out of road protection works in about fifteen (15) selected critical slopes to protect and improve connectivity.

- 2.6. Carrying out of river bank protection works in about five (5) selected stretches to reduce the risk of river bank erosions and connectivity loss.”
- (b) Component 3 in Schedule 1 to the Financing Agreement is amended to include the following additional activities:
- 3.8. Construction of a training facility for disaster risk response personnel to strengthen Uttarakhand’s capacity to respond to disasters and climate change related events.
- 3.9. Provision of specialized training equipment on disaster risk management including, *inter alia*, collapsed structures, medical first response, mountaineering and high altitude, and water search and rescue.
- (c) The definitions of “ESMF” (definition #15), “GAAP” (definition #16) and “Operations Manual” (definition #23) are amended to read as follows:
- “15. ‘ESMF’ means the Project Implementing Entity’s environmental and social management framework disclosed by Uttarakhand on September 18, 2013, as updated and re-disclosed on January 20, 2018, setting forth the guiding principles, standards and procedures for: (a) the screening of Project activities and the identification of any adverse or positive environmental impacts caused, or expected to be caused, on account of their implementation; and (b) the preparation of their prescribed environmental impact assessments and environmental management plans, social impact assessments and social management plans, and resettlement action plans for Displaced Persons; as such framework may be revised, updated or supplemented from time to time with the prior written concurrence of the Association.
16. ‘GAAP’ means the Project Implementing Entity’s governance and accountability action plan dated October 4, 2013, as updated on December 18, 2018, for purposes of the Project; which plan sets out the key actions to be undertaken by the Project Implementing Entity to strengthen governance, transparency and accountability under the Project; as such action plan may be revised, updated or supplemented, from time to time, with the prior written concurrence of the Association.
- [...]
23. ‘Operations Manual’ the manual dated October 4, 2013 prepared and adopted by the Project Implementing Entity, as updated on December 18, 2018, setting forth guidelines and procedures for the implementation of the Project, including: (i) the allocation of functions, powers and responsibilities between the Steering Committee, the USDMA, the PMU and the Line Departments and Agencies, for Project implementation; (ii) the financial management arrangements consistent with Section III of Schedule 2 to this Agreement; (iii) the eligibility criteria for Selected Beneficiaries and the amounts and terms and conditions of the Housing Sub-grants (“Policy Document for Housing Reconstruction”); (v) the key action to be undertaken by the various implementation units and the Line Departments and Agencies in order to strengthen/ensure their governance and accountability; (vi) the monitoring and evaluation framework for Project activities; and (vii) design and

technical standards for resilient housing, resilient public buildings, village roads, Other District Roads and bridle roads and bridges to be constructed/reconstructed under the Project, as said manual may be amended from time to time with the prior concurrence of the Association.

4. Please confirm your agreement to the amendments provided in paragraph 3 above, by signing the form of confirmation set forth below, and returning a fully executed original of this amendment letter to us and retaining one original for your records.
5. These amendments shall become effective as of August 1, 2018, upon the receipt by the Association of a duly countersigned original of this letter of amendment.

With regards,

Yours sincerely,

/S/ HISHAM ABDO

Hisham Abdo
Acting Country Director, India

AGREED:

INDIA

By /S/ SAMEER KUMAR KHARE
Authorized Representative

Name: SAMEER KUMAR KHARE

Title: ADDITIONAL SECRETARY

Date: MARCH 5, 2019

cc: Mr. Utpal Kumar Singh, Chief Secretary, Government of Uttarakhand
Ms. Bandana Preyashi, Director (MI), Department of Economic Affairs, Ministry Finance,
Government of India.
Mr. Sukhbir Singh, Comptroller, Aid Accounts & Audit, Department of Economic Affairs,
Ministry of Finance, Government of India
Mr. Amit Singh Negi, Secretary Finance and Secretary Disaster Management, Uttarakhand State
Disaster Management Authority.
Mr. Savin Bansal, Project Director, UDRPAF, Government of Uttarakhand

Appendix XI

**Source : Through email from the Program Director, UEAP office,
Government of Uttarakhand, Dehradun.**

LOAN NUMBER 3055 - IND

LOAN AGREEMENT
(Ordinary Operations)
(Uttarakhand Emergency Assistance Project)

between

INDIA

and

ASIAN DEVELOPMENT BANK

DATED 05 February 2014

IND 47229

LOAN AGREEMENT (Ordinary Operations)

LOAN AGREEMENT dated 05 February 2014 between INDIA acting by its President ("Borrower") and ASIAN DEVELOPMENT BANK ("ADB").

WHEREAS

(A) the Borrower has applied to ADB for a loan for the purposes of the Project described in Schedule 1 to this Loan Agreement;

(B) the Project will be carried out by the State of Uttarakhand ("State") acting through the State Disaster Management Authority ("SDMA"), and for this purpose the Borrower will make available to the EA, the proceeds of the loan provided for herein upon terms and conditions mutually agreeable to ADB and the Borrower;

(C) ADB has agreed to make a loan to the Borrower from ADB's ordinary capital resources upon the terms and conditions set forth herein and in the Project Agreement of even date herewith between ADB on the one part, and the State, and SDMA on the other part;

NOW THEREFORE the parties hereto agree as follows:

ARTICLE I

Loan Regulations; Definitions

Section 1.01. All the provisions of the Ordinary Operations Loan Regulations Applicable to LIBOR-Based Loans Made from ADB's Ordinary Capital Resources, dated 1 July 2001 ("Loan Regulations"), are hereby made applicable to this Loan Agreement with the same force and effect as if they were fully set forth herein, subject, however, to the following modifications:

(a) Section 3.03 is deleted and the following is substituted therefor:

Commitment Charge; Credit; Maturity Premium.

(a) The Borrower shall pay a commitment charge on the unwithdrawn amount of the Loan at the rate and on the terms specified in the Loan Agreement.

(b) ADB shall provide to the Borrower a credit at the rate specified in the Loan Agreement, which credit shall remain fixed for the term of the Loan. ADB shall apply the credit against the interest payable by the Borrower.

(c) The Borrower shall pay a maturity premium at the rate specified in the Loan Agreement, which maturity premium shall remain fixed for the term of the Loan. ADB shall add the maturity premium to the interest payable by the Borrower.

(b) Section 3.06 is deleted and the following is substituted therefor:

Rebate. (a) Following any announcement by ADB that the Fixed Spread applicable to new Loans shall be reduced, ADB shall provide a Rebate to any Borrower with an outstanding Loan on which a higher Fixed Spread is applicable. The amount of the Rebate shall be determined by multiplying (i) the difference between the Fixed Spread applicable to the outstanding Loan and the Fixed Spread that will be applied to new Loans (expressed as a percentage per annum), by (ii) the principal amount of the outstanding Loan on which the Borrower shall pay interest for all interest periods commencing on and after the effective date of the lower Fixed Spread that will be applied to new Loans.

(b) Following any announcement by ADB that its Funding Cost Margin calculations with respect to any Loan Currency (or Approved Currency) in any Semester resulted in ADB achieving savings, ADB shall provide a Rebate to the Borrower. The amount of the Rebate shall be determined by multiplying (i) the Funding Cost Margin (expressed as a percentage per annum) by (ii) the principal amount of the Loan on which the Borrower shall pay interest for the Interest Period commencing immediately after the Semester for which the Funding Cost Margin was calculated. ADB shall apply the amount of the Rebate against the interest payable by the Borrower for the Interest Period commencing immediately after the Semester for which the Funding Cost Margin was calculated.

(c) Section 3.07 is deleted and the following is substituted therefor:

Surcharge. (a) Following any announcement by ADB that the Fixed Spread applicable to new Loans shall be increased, any Borrower with an outstanding Loan on which a lower Fixed Spread is applicable shall pay ADB a Surcharge. The amount of the Surcharge shall be determined by multiplying (i) the difference between the Fixed Spread that will be applied to new Loans and the Fixed Spread applicable to the outstanding Loan (expressed as a percentage per annum), by (ii) the principal amount of the outstanding Loan on which the Borrower shall pay interest for all interest periods commencing on and after the effective date of the higher Fixed Spread that will be applied to new Loans.

(b) Following any announcement by ADB that its Funding Cost Margin calculations with respect to any Loan Currency (or Approved Currency) in any Semester resulted in ADB incurring additional costs, the Borrower shall pay ADB a Surcharge. The amount of the Surcharge shall be determined by multiplying (i) the Funding Cost Margin (expressed as a percentage per annum) by (ii) the principal amount of the Loan on which the Borrower shall pay interest for the Interest Period commencing immediately after the Semester for which the Funding Cost Margin was calculated. ADB shall add the amount of the Surcharge to the interest payable by the Borrower for the Interest Period commencing immediately after the Semester for which the Funding Cost Margin was calculated.

Section 1.02. Wherever used in this Loan Agreement, the several terms defined in the Loan Regulations have the respective meanings therein set forth unless modified herein or the context otherwise requires. Additional terms used in this Loan Agreement have the following meanings:

(a) "Consulting Guidelines" means the Guidelines on the Use of Consultants by Asian Development Bank and its Borrowers (2013, as amended from time to time);

(b) "Consulting Services" means the services to be financed out of the proceeds of the Loan as described in paragraph 3 of Schedule 1 to this Loan Agreement;

(c) "EA" or "Project Executing Agency" means the State acting through the SDMA;

(d) "EARF" means the environmental assessment and review framework for the Project, including any update thereto, prepared and submitted by the Borrower through the EA and cleared by ADB;

(e) "EIA" means the environment impact assessment, including any update thereto, prepared and submitted by the Borrower through the EA pursuant to the requirements set forth in the EARF and cleared by ADB;

(f) "Emergency" means the resultant disaster and damages that occurred in the State due to the 15-17 June 2013 flash floods and heavy rains and landslides in the State;

(g) "EMMP" means the environmental management and monitoring plan, including any update thereto, incorporated in the EIA/IEE;

(h) "Environmental Safeguards" means the principles and requirements set forth in Chapter V, Appendix 1, and Appendix 4 (as applicable) of the SPS;

(i) "Financing Arrangements" means the arrangements between the Borrower and the State as per current policy of the Borrower and acceptable to ADB;

(j) "Goods" means equipment and materials to be financed out of the proceeds of the Loan, including related services such as transportation, insurance, installation, commissioning, training, and initial maintenance, but excluding Consulting Services;

(k) "HPC" means the High Powered Committee for Sanction of Post Disaster Reconstruction Works, set up by the State vide State notification dated 22 August 2013;

(l) "IA" means any of the implementing agency as the context may require, as mandated by the SDMA to undertake the Project within its sector, and currently include the Public Works Department (for roads, bridges and trekking routes including eco-trails), Department of Tourism through the Uttarakhand Tourism Development Board ("UTDB")/ Garhwal Mandal Vikas Nigam ("GMVN")/ Kumaon Mandal Vikas Nigam ("KMVN") (for tourism infrastructure), Uttarakhand Civil Aviation Development Authority (for helipads), Uttarakhand Jal Sansthan (for urban water supply);

(m) "IEE" means the initial environmental examination, including any update thereto, prepared and submitted by the Borrower through the EA pursuant to the requirements set forth in the EARF and cleared by ADB;

(n) "Indigenous Peoples Safeguards" means the principles and requirements set forth in Chapter V, Appendix 3, and Appendix 4 (as applicable) of the SPS;

(o) "Involuntary Resettlement Safeguards" means the principles and requirements set forth in Chapter V, Appendix 2, and Appendix 4 (as applicable) of the SPS;

(p) "IPF" means the indigenous peoples framework for the Project, including any update thereto, prepared and submitted by the Borrower through the EA and cleared by ADB;

(q) "IPP" means the indigenous peoples plan for the Project, including any update thereto, prepared and submitted by the Borrower through the EA pursuant to the requirements set forth in the IPF and cleared by ADB;

(r) "JRDNA" means the Joint Rapid Damage and Needs Assessment undertaken by ADB and the World Bank during the month of July-August 2013 resulting in a JRDNA Report in August 2013;

(s) "Loan Disbursement Handbook" means ADB's Loan Disbursement Handbook (2012, as amended from time to time);

(t) "NGO" means a non-government organization;

(u) "PAM" means the project administration manual for the Project dated September 2013 and agreed between the Borrower, the State, SDMA, and ADB, as updated from time to time in accordance with the respective administrative procedures of the Borrower and ADB;

(v) "PMU" means the Project management unit set up in SDMA, responsible to oversee the Project implementation;

(w) "Procurement Guidelines" means ADB's Procurement Guidelines (2013, as amended from time to time);

(x) "Procurement Plan" means the procurement plan for the Project, included in the PAM, as agreed between the Borrower and ADB, and as updated from time to time in accordance with the Procurement Guidelines, the Consulting Guidelines, and other arrangements agreed with ADB;

(y) "RF" means the resettlement framework for the Project, including any update thereto, prepared and submitted by the Borrower through the EA and cleared by ADB;

(z) "RP" means the resettlement plan for the Project, including any update thereto, prepared and submitted by the Borrower through the EA pursuant to the requirements set forth in the RF and cleared by ADB;

(aa) "RRP" means the Report and Recommendation of the President on the Project, to the ADB Board;

(bb) "Safeguards Monitoring Report" means each report prepared and submitted by the Borrower through the EA to ADB that describes progress with implementation of, and compliance with, the EMMP, the RP and the IPP (as applicable), including any corrective and preventative actions;

(cc) "Safeguard Policy Statement" or "SPS" means ADB's Safeguard Policy Statement (2009);

(dd) "SDMA" means the Uttarakhand State Disaster Management Authority established by the State under the Borrower's Disaster Management Act, 2005, vide State notification of October 10, 2007, with the State Chief Minister as its ex-officio Chairperson.

(ee) "Subproject" means a subproject that is found eligible for financing under the Project as included in the Project based on compliance with the 'Subproject Selection Criteria and Approval Procedures' as included in Appendix 2 (Linked Document 13) to the RRP and that also satisfies requirements set forth in paragraph 5 of Schedule 5 to this Loan Agreement; and

(ff) "Works" means construction or civil works to be financed out of the proceeds of the Loan, including services such as drilling or mapping, and project related services that are provided as part of a single responsibility or turnkey contract, but excluding Consulting Services.

ARTICLE II

The Loan

Section 2.01. (a) ADB agrees to lend to the Borrower from ADB's ordinary capital resources an amount of two hundred million Dollars (\$200,000,000), as such amount may be converted from time to time through a Currency Conversion in accordance with the provisions of Section 2.06 of this Loan Agreement.

(b) The Loan has a principal repayment period of 20 years, and a grace period as defined in subsection (c) hereinafter.

(c) The term "grace period" as used in subsection (b) hereinabove means the period prior to the first Principal Payment Date in accordance with the amortization schedule set forth in Schedule 2 to this Loan Agreement.

Section 2.02. The Borrower shall pay to ADB interest on the principal amount of the Loan withdrawn and outstanding from time to time at a rate for each Interest Period equal to the sum of:

- (a) LIBOR;
- (b) 0.60% as provided by Section 3.02 of the Loan Regulations less a credit of 0.20% as provided by Section 3.03 of the Loan Regulations; and
- (c) a maturity premium of 0.10% as provided by Section 3.03 of the Loan Regulations.

Section 2.03. The Borrower shall pay a commitment charge of 0.15% per annum. Such charge shall accrue on the full amount of the Loan (less amounts withdrawn from time to time), commencing 60 days after the date of this Loan Agreement.

Section 2.04. Interest and other charges on the Loan shall be payable semiannually on 15 April and 15 October in each year.

Section 2.05. The Borrower shall repay the principal amount of the Loan withdrawn from the Loan Account in accordance with the provisions of Schedule 2 to this Loan Agreement.

Section 2.06. (a) The Borrower may at any time request any of the following Conversions of the terms of the Loan in order to facilitate prudent debt management:

- (i) a change of the Loan Currency of all or any portion of the principal amount of the Loan, whether withdrawn and outstanding or unwithdrawn, to an Approved Currency;
- (ii) a change of the interest rate basis applicable to all or any portion of the principal amount of the Loan withdrawn and outstanding from a Floating Rate to a Fixed Rate, or vice versa; and

- (iii) the setting of limits on the Floating Rate applicable to all or any portion of the principal amount of the Loan withdrawn and outstanding by the establishment of an Interest Rate Cap or Interest Rate Collar on said Floating Rate.

(b) Any conversion requested pursuant to subsection (a) hereinabove that is accepted by ADB shall be considered a "Conversion", as defined in Section 2.01(6) of the Loan Regulations, and shall be effected in accordance with the provisions of Article V of the Loan Regulations and the Conversion Guidelines.

ARTICLE III

Use of Proceeds of the Loan

Section 3.01. The Borrower shall make the proceeds of the Loan available to the EA upon terms and conditions mutually agreeable to ADB and the Borrower, and shall cause the EA to apply such proceeds to the financing of expenditures on the Project in accordance with the provisions of this Loan Agreement and the Project Agreement.

Section 3.02. The proceeds of the Loan shall be allocated and withdrawn in accordance with the provisions of Schedule 3 to this Loan Agreement, as such Schedule may be amended from time to time by agreement between the Borrower and ADB.

Section 3.03. Except as ADB may otherwise agree, the Borrower shall procure, or cause to be procured, the items of expenditure to be financed out of the proceeds of the Loan in accordance with the provisions of Schedule 4 to this Loan Agreement. ADB may refuse to finance a contract where any such item has not been procured under procedures substantially in accordance with those agreed between the Borrower and ADB or where the terms and conditions of the contract are not satisfactory to ADB.

Section 3.04. Except as ADB may otherwise agree, the Borrower shall cause all items of expenditure financed out of the proceeds of the Loan to be used exclusively in the carrying out of the Project.

Section 3.05. The Loan Closing Date for the purposes of Section 9.02 of the Loan Regulations shall be 31 March 2017 or such other date as may from time to time be agreed between the Borrower and ADB.

ARTICLE IV

Particular Covenants

Section 4.01. (a) The Borrower shall cause the Project to be carried out by the EA with due diligence and efficiency and in conformity with sound applicable technical, financial, business, and development practices.

(b) In the carrying out of the Project and operation of the Project facilities, the Borrower shall perform, or cause to be performed by the EA, all applicable obligations set forth in this Loan Agreement and the Project Agreement.

Section 4.02. The Borrower shall make available, or cause to be made available by the EA, promptly as needed, the funds, facilities, services, land and other resources, as required, in addition to the proceeds of the Loan, for the carrying out of the Project.

Section 4.03. The Borrower shall ensure that the activities of its departments and agencies, and that of the EA, with respect to the carrying out of the Project and operation of the Project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.

Section 4.04. The Borrower shall enable ADB's representatives to inspect the Project, the Goods and Works, and any relevant records and documents.

Section 4.05. In so far as it relates to the Project, the Borrower shall take all actions which shall be necessary on its part to enable the EA to perform its respective obligations under the Project Agreement, and shall not take or permit any action which would interfere with the performance of such obligations.

Section 4.06. (a) In so far as it relates to the Project, the Borrower shall exercise its rights under the Financing Arrangements in such a manner as to protect the interests of the Borrower and ADB and to accomplish the purposes of the Loan.

(b) In so far as it relates to the Project, no rights or obligations under the Financing Arrangements shall be assigned, amended, abrogated or waived without the prior notice to ADB.

ARTICLE V

Effectiveness

Section 5.01. A date 90 days after the date of this Loan Agreement is specified for the effectiveness of this Loan Agreement for the purposes of Section 10.04 of the Loan Regulations.

ARTICLE VI

Miscellaneous

Section 6.01. The Secretary, Additional Secretary, Joint Secretary, Director, or Deputy Secretary in the Department of Economic Affairs of the Ministry of Finance of the Borrower is designated as representative of the Borrower for the purposes of Section 12.02 of the Loan Regulations.

Section 6.02. The following addresses are specified for the purposes of Section 12.01 of the Loan Regulations:

For the Borrower

The Secretary to the Government of India
Department of Economic Affairs
Ministry of Finance
North Block
New Delhi – 110001
India

Facsimile Numbers:

(91-11) 2309-2477
(91-11) 2309-2511.

For ADB

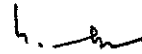
Asian Development Bank
6 ADB Avenue
Mandaluyong City
1550 Metro Manila
Philippines

Facsimile Numbers:

(0091)11-24107200
(0091)11-24194239.

IN WITNESS WHEREOF the parties hereto, acting through their representatives thereunto duly authorized, have caused this Loan Agreement to be signed in their respective names as of the day and year first above written and to be delivered at the principal office of ADB.

INDIA



By _____
Nilaya Mitash
Joint Secretary (MI)
Department of Economic Affairs

ASIAN DEVELOPMENT BANK



By _____
M. Teresa Kho
Country Director

SCHEDULE 1

Description of the Project

1. The objective of the Project is the critical public and social infrastructure restored and disaster preparedness improved in the State.
2. The Project shall comprise following
 - (a) Roads and Bridges reconstructed and upgraded to all weather standards – Rehabilitation and reconstruction of about 1,800 kilometers (km) of State highways (SH) and major district roads (MDR) including about 16 damaged bridges on the SH and MDR affected under the emergency. In addition, rehabilitation and reconstruction of about 600 km of road section on ongoing ADB assisted projects in the State (ADB Loans 2308, and 2458) that have been destroyed under the Emergency.
 - (b) Urban Infrastructure reconstructed and upgraded – Rehabilitation and reconstruction of affected water supply infrastructure and urban roads in about 8-10 towns in the State. This will include (i) rehabilitation and capacity augmentation of existing water treatment plants and tube wells, increasing the potable water production capacity by 21 million litres per day (MLD); (ii) replacement of about 56 km of affected water pipe line, and (iii) construction and upgradation of about 20 km of affected urban roads.
 - (c) Tourism Infrastructure and trekking routes rehabilitated and reconstructed – Rehabilitation and reconstruction of affected tourism infrastructure in the 5 affected districts of the State i.e., Bageshwar, Chamoli, Pithoragarh, Rudraprayag, and Uttarakashi. About 10 trekking routes including eco-trails will be rehabilitated and upgraded including construction of rest houses and public amenities in en-route villages.
 - (d) Improved capacity on disaster preparedness and Management – To improve disaster preparedness, construction of about 50 helipads/ heliports/ helidromes, with associated amenities for undertaking emergency evacuation and relief operations.
3. Design and supervision services for infrastructure under paragraph 2 above and studies for undertaking carrying capacity and tourist regulation will be carried out under the Project through consulting services.
4. The Project is expected to be completed by 30 September 2016.

SCHEDULE 2

Amortization Schedule

(Uttarakhand Emergency Assistance Project)

1. The following table sets forth the Principal Payment Dates of the Loan and the percentage of the total principal amount of the Loan payable on each Principal Payment Date (Installment Share). If the proceeds of the Loan shall have been fully withdrawn as of the first Principal Payment Date, the principal amount of the Loan repayable by the Borrower on each Principal Payment Date shall be determined by ADB by multiplying: (a) the total principal amount of the Loan withdrawn and outstanding as of the first Principal Payment Date; by (b) the Installment Share for each Principal Payment Date, such repayment amount to be adjusted, as necessary, to deduct any amounts referred to in paragraph 4 of this Schedule, to which a Currency Conversion applies.

Sequence	Date Payment Due	Installment Share (Expressed as a %)
1	15 April 2019	2.500000
2	15 October 2019	2.500000
3	15 April 2020	2.500000
4	15 October 2020	2.500000
5	15 April 2021	2.500000
6	15 October 2021	2.500000
7	15 April 2022	2.500000
8	15 October 2022	2.500000
9	15 April 2023	2.500000
10	15 October 2023	2.500000
11	15 April 2024	2.500000
12	15 October 2024	2.500000
13	15 April 2025	2.500000
14	15 October 2025	2.500000
15	15 April 2026	2.500000
16	15 October 2026	2.500000
17	15 April 2027	2.500000
18	15 October 2027	2.500000
19	15 April 2028	2.500000
20	15 October 2028	2.500000
21	15 April 2029	2.500000
22	15 October 2029	2.500000
23	15 April 2030	2.500000
24	15 October 2030	2.500000
25	15 April 2031	2.500000
26	15 October 2031	2.500000
27	15 April 2032	2.500000
28	15 October 2032	2.500000

Schedule 2

Sequence	Date Payment Due	Installment Share (Expressed as a %)
29	15 April 2033	2.500000
30	15 October 2033	2.500000
31	15 April 2034	2.500000
32	15 October 2034	2.500000
33	15 April 2035	2.500000
34	15 October 2035	2.500000
35	15 April 2036	2.500000
36	15 October 2036	2.500000
37	15 April 2037	2.500000
38	15 October 2037	2.500000
39	15 April 2038	2.500000
40	15 October 2038	2.500000
	Total	100.000000

2. If the proceeds of the Loan shall not have been fully withdrawn as of the first Principal Payment Date, the principal amount of the Loan repayable by the Borrower on each Principal Payment Date shall be determined as follows:

(a) To the extent that any proceeds of the Loan shall have been withdrawn as of the first Principal Payment Date, the Borrower shall repay the amount withdrawn and outstanding as of such date in accordance with paragraph 1 of this Schedule.

(b) Any withdrawal made after the first Principal Payment Date shall be repaid on each Principal Payment Date falling after the date of such withdrawal in amounts determined by ADB by multiplying the amount of each such withdrawal by a fraction, the numerator of which shall be the original Installment Share specified in the table in paragraph 1 of this Schedule for said Principal Payment Date (the Original Installment Share) and the denominator of which shall be the sum of all remaining Original Installment Shares for Principal Payment Dates falling on or after such date, such repayment amounts to be adjusted, as necessary, to deduct any amounts referred to in paragraph 4 of this Schedule, to which a Currency Conversion applies.

3. Withdrawals made within two calendar months prior to any Principal Payment Date shall, for the purposes solely of calculating the principal amounts payable on any Principal Payment Date, be treated as withdrawn and outstanding on the second Principal Payment Date following the date of withdrawal and shall be repayable on each Principal Payment Date commencing with the second Principal Payment Date following the date of withdrawal.

4. Notwithstanding the provisions of paragraphs 1 and 2 of this Schedule, upon a Currency Conversion of all or any portion of the withdrawn principal amount of the Loan to an Approved Currency, the amount so converted in said Approved Currency that shall be repayable on any Principal Payment Date occurring during the Conversion Period, shall be determined by ADB by multiplying such amount in its currency of denomination immediately prior to said Conversion by either: (i) the exchange rate that reflects the amounts of principal in said Approved Currency payable by ADB under the Currency Hedge Transaction relating

Schedule 2

to said Conversion; or (ii) if ADB so determines in accordance with the Conversion Guidelines, the exchange rate component of the Screen Rate.

5. If the principal amount of the Loan withdrawn and outstanding from time to time shall be denominated in more than one Loan Currency, the provisions of this Schedule shall apply separately to the amount denominated in each Loan Currency, so as to produce a separate amortization schedule for each such amount.

SCHEDULE 3

Allocation and Withdrawal of Loan Proceeds

General

1. The table attached to this Schedule sets forth the Categories of items of expenditure to be financed out of the proceeds of the Loan and the allocation of the Loan proceeds to each such Category ("Table"). (Reference to "Category" in this Schedule is to a Category of the Table).

Basis for Withdrawal from the Loan Account

2. Except as ADB may otherwise agree, the proceeds of the Loan shall be disbursed on the basis of the withdrawal percentage for each item of expenditure set forth in the Table.

Reallocation

3. Notwithstanding the allocation of Loan proceeds and the withdrawal percentages set forth in the Table,

(a) if the amount of the Loan allocated to any Category appears to be insufficient to finance all agreed expenditures in that Category, ADB may, in consultation with and by notice to the Borrower, and the EA, (i) reallocate to such Category, to the extent required to meet the estimated shortfall, amounts of the Loan which have been allocated to another Category but, in the opinion of ADB, are not needed to meet other expenditures, and (ii) if such reallocation cannot fully meet the estimated shortfall, reduce the withdrawal percentage applicable to such expenditures in order that further withdrawals under such Category may continue until all expenditures thereunder shall have been made; and

(b) if the amount of the Loan allocated to any Category appears to exceed all agreed expenditures in that Category, ADB may, in consultation with and by notice to the Borrower, and the EA, reallocate such excess amount to any other Category.

Disbursement Procedures

4. Except as ADB may otherwise agree, the Loan proceeds shall be disbursed in accordance with the Loan Disbursement Handbook.

Retroactive Financing

5. Withdrawals from the Loan Account may be made for reimbursement of eligible expenditures incurred under the Project before the Effective Date in connection with items to be retroactively financed, subject to a maximum amount equivalent to 30% of the Loan amount; provided that the expenditures have been incurred and paid for after the Emergency occurred but not earlier than 12 months before the date of this Loan Agreement.

Conditions for Withdrawals from Loan Account

6. Notwithstanding any other provision of this Loan Agreement, no withdrawals shall be made from the Loan Account until the HPC, PMU, and Project implementation units at the IAs shall have been in place with adequate staffing acceptable to ADB.

TABLE

ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS (Uttarakhand Emergency Assistance Project)			
Number	Item	Total Amount Allocated for ADB Financing (\$) Category	Basis for Withdrawal from the Loan Account
1	Works	162,000,000	100% of total expenditure claimed
2	Equipment	2,000,000	100% of total expenditure claimed
3	Consulting Services	10,000,000	100% of total expenditure claimed
4	Administrative Costs	5,000,000	100% of total expenditure claimed
5	Unallocated	21,000,000	
	Total	200,000,000	

SCHEDULE 4

Procurement of Goods, Works and Consulting Services

General

1. The procurement of Goods, Works and Consulting Services shall be subject to and governed by the Procurement Guidelines, and the Consulting Guidelines, respectively.
2. All terms used in this Schedule and not otherwise defined in this Loan Agreement have the meanings provided in the Procurement Guidelines and/or the Consulting Guidelines, as applicable.

Goods and Works

3. Except as ADB may otherwise agree, Goods and Works shall only be procured on the basis of the methods of procurement set forth below:
 - (a) National Competitive Bidding;
 - (b) Shopping;
 - (c) Direct Contracting; and
 - (d) Force Account.
4. The methods of procurement are subject to, among other things, the detailed arrangements and threshold values set forth in the Procurement Plan. The Borrower and EA may only modify the methods of procurement or threshold values with the prior agreement of ADB, and modifications must be set out in updates to the Procurement Plan.

Domestic Preference

5. The State may allow SDMA and relevant IA to grant a margin of preference in the evaluation of bids under international competitive bidding in accordance with paragraphs 2.55(a) and 2.56 of the Procurement Guidelines for domestically manufactured Goods.

National Competitive Bidding

6. The Borrower, EA, and ADB shall ensure that, prior to the commencement of any procurement activity under national competitive bidding, the Borrower's/State's applicable national competitive bidding procedures are consistent with the Procurement Guidelines. Any modifications or clarifications to such procedures agreed between the Borrower, the EA, and ADB shall be set out in the Procurement Plan. Any subsequent change to the agreed modifications and clarifications shall become effective only after approval of such change by the Borrower, EA, and ADB.

Community Participation in Procurement

7. The EA may use community participation in procurement for Works contracts for trek routes in accordance with the agreed procedures set out in the Procurement Plan.

Conditions for award of Works contracts

8. As conditions for award of any Contract under the Project, and towards effective and efficient implementation of the Project and the Subprojects, the EA and each IA shall ensure following:

(a) No Works contract shall be awarded which involves environmental impacts and/or requires statutory environmental clearances until the relevant IA has

- (i) obtained final environmental clearance/approvals including the EIA/IEE, from the relevant government environment authority/ADB as required;
- (ii) incorporated the relevant provisions from the EMMP into the Works contract; and
- (iii) in case of the category A subproject for environment categorization, completed the 120 day public disclosure of the approved EIA for the Subproject in accordance with ADB's Safeguard Policy Statement (2009).

(b) No Works contract will be awarded which involves involuntary resettlement impacts until the relevant IA has prepared and submitted to ADB the relevant RP and obtained ADB's clearance of such RP.

(c) No Works contract will be awarded which involves impacts on indigenous peoples until the relevant IA has prepared and submitted to ADB the relevant IPP and obtained ADB's clearance of such IPP.

Conditions for Commencement of Civil Works

9. As a condition for commencement of civil Works under any Contract under the Subproject or section(s) thereof that requires forest clearance, the EA and each IA will ensure that all applicable statutory forest clearances have been obtained from relevant authorities for such Subproject or section(s) thereof.

Consulting Services

10. Except as ADB may otherwise agree, and except as set forth in the paragraph below, the EA shall apply quality- and cost-based selection for selecting and engaging Consulting Services.

11. The EA shall recruit the individual consultants in accordance with procedures acceptable to ADB for recruiting individual consultants.

Industrial or Intellectual Property Rights

12. (a) The EA shall ensure that all Goods and Works procured (including without limitation all computer hardware, software and systems, whether separately procured or incorporated within other goods and services procured) do not violate or infringe any industrial property or intellectual property right or claim of any third party.

(b) The EA shall ensure that all contracts for the procurement of Goods and Works contain appropriate representations, warranties and, if appropriate, indemnities from the contractor or supplier with respect to the matters referred to in subparagraph (a) of this paragraph.

13. The EA shall ensure that all ADB-financed contracts with consultants contain appropriate representations, warranties and, if appropriate, indemnities from the consultants to ensure that the Consulting Services provided do not violate or infringe any industrial property or intellectual property right or claim of any third party.

ADB's Review of Procurement Decisions

14. Contracts procured under international competitive bidding procedures and contracts for Consulting Services shall be subject to prior review by ADB, unless otherwise agreed between the Borrower, EA, and ADB and set forth in the Procurement Plan.

SCHEDULE 5

Execution of Project

Implementation Arrangements

1. (a) The Borrower, EA, and IAs shall ensure that the Project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM will become effective only after approval of such change by the Borrower, EA, relevant IA, and ADB. In the event of any discrepancy between the PAM and the Loan Agreement, the provisions of the Loan Agreement will prevail.

(b) The Borrower, EA, and each IA shall ensure that towards smooth implementation of the Project, grievances if any from stakeholders, relating to any Project implementation issues or use of funds are addressed effectively and efficiently.

(c) The EA shall ensure that all executing and implementing agencies under the Project are always adequately staffed by competent and qualified personnel including for safeguards, finance, accounts, technical, planning, and disaster risk management measures, for effective and timely implementation of the Project and Subprojects.

(d) In the event of any changes in implementation arrangements to meet the Project requirements, the EA shall keep ADB informed on a timely basis and consult with ADB to ensure that any successor entities/ revised arrangements adequately address Project implementation in a seamless manner towards timely completion of the Project. To this end, if required, the Borrower and EA shall enter into amendment agreements as required, to the Loan Agreement and Project Agreement.

Steering Committee

2. The State shall establish and maintain through the period of Project implementation, the State level Core Committee for Monitoring and Review of Disaster Management (Committee) under the chairmanship of the State Chief Secretary. The Committee shall be responsible, inter alia, for providing overall guidance for the Project and will meet at least once in three months or more frequently as required, to ensure efficient and timely completion of the Project.

Counterpart Funds and Facilities Maintenance

3. The State shall make available the ADB loan proceeds to SDMA and the relevant IAs on a timely basis, and ensure:

(a) timely and sufficient counterpart funds from its budget for each fiscal year, for the efficient implementation of the Project, including the funds needed for implementing and monitoring the EMMPs and RPs, other social matters, and any cost overruns in respect thereof; and

(b) adequate funds towards operations and maintenance of Project facilities, through budgetary allocations or other means, to be provided to SDMA, each IA, during and after the Project completion.

4. The EA shall initiate administrative approvals to ensure compulsory comprehensive insurance of rehabilitated and reconstructed public infrastructure and shall also encourage similar insurance for private properties in the State that includes adequate coverage for natural calamities, including but not limited to, earthquake, floods, and high speed winds.

Selection and Approval of Subprojects

5. The EA shall ensure that all Subprojects are appraised, selected and approved in compliance with the requirements of Appendix 2 (Linked Document 13) to the RRP on "Subproject Selection Criteria and Approval Procedures" to the Satisfaction of ADB. Without limitation to this, the EA shall ensure that each Subproject as applicable

(a) has first been prioritized and selected and endorsed as feasible, by the EA based on (i) existing facilities and levels of usage , (ii) sector restoration and contribution to economic growth based on the JRDNA report (iii) takes into account Geographical Information System (GIS) mapping as feasible, and all weather conditions, as required;

(b) involves rehabilitation and reconstruction of infrastructure damaged under the Emergency with the design and construction standards raised to an appropriate level with focus on sustainability and to build back same or better;

(c) will not involve overlap with funding from other agencies, though other agencies such as bi-laterals and non-government organizations may be involved in co-financing, as well as delivery of specific additional support such as monitoring, capacity building and poverty alleviation, in which case these will clearly be defined;

(d) will not overlap with other ongoing projects of ADB in the State except those included from ADB Loan 2308, and Loan 2458, and indicated in the indicative list of subprojects under Appendix (1) to the PAM;

(e) seeks adequate participation of relevant stakeholders and affected people, NGOs, CBOs, community including in particular women and vulnerable groups of the society in the selection, design, implementation and monitoring of the rehabilitation and reconstruction of Project facilities;

(f) the equipment, materials and other resources required can be acquired in or carried to the Subproject location without undue delays and as feasible provide access to services and opportunities to local labor, both men and women; and

(g) is scheduled to be completed no later than 30 September 2016.

Sector specific measures

6. With regards to roads and bridges rehabilitated and reconstructed under the Project, without limiting the generality of Project requirements, the EA shall ensure that the relevant IA shall in particular ensure

(a) strict adherence by contractors to national and State road safety standards on signage, road markings, roadside structures, and maintenance, as well as traffic management; and

(b) that road safety audits are systematically conducted at various stages in the Subprojects' development.

7. With regard to tourism infrastructure rehabilitated and reconstructed under the Project, without limiting the generality of Project requirements, the EA in particular shall

(a) prepare guidelines for new infrastructure to be developed under the sector by no later than 31 March 2014;

(b) prepare master plan for redevelopment of *Kedarnath Dham*; and

(c) undertake the carrying capacity and tourist regulation studies and measures thereof.

8. (a) With regard to the acceptability of certain IAs i.e., UCADA, GMVN, and KMVN, the EA shall ensure to the satisfaction of ADB, that the institutional and staff skill mix of these IAs adequately address Project implementation requirements towards timely completion of the Project under the sector.

(b) The rehabilitation and reconstruction of trek routes, including eco-trails may be assigned by the Public Works Department to responsible State government departments/agencies as required, in consultation with ADB.

Safeguards and Social

Environment

9. The Borrower shall ensure or cause the EA and IAs to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project facilities comply with (i) all applicable laws and regulations of the Borrower and State relating to environment, health, and safety; (ii) the Environmental Safeguards of ADB; and (iii) all measures and requirements set forth in the EARF, EIA/ IEE as applicable, and the EMMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.

Land Acquisition and Involuntary Resettlement

10. (a) Where the need arises, the Borrower shall ensure or cause the EA and relevant IA to ensure that all land and all rights-of-way required for the Project, and all Project facilities are made available to the Works contractor in accordance with the schedule agreed under the related Works contract and all land acquisition and resettlement activities are implemented in compliance with (i) all applicable laws and regulations of the Borrower and State relating to land acquisition and involuntary resettlement; (ii) the Involuntary Resettlement Safeguards of ADB; and (c) all measures and requirements set forth in the RF and the respective RP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.

(b) Without limiting the application of the Involuntary Resettlement Safeguards of ADB, or the RP, the Borrower shall ensure or cause the EA and the relevant IA to ensure that no physical or economic displacement takes place in connection with the project until:

- (i) compensation and other entitlements have been provided to affected people in accordance with the RP; and
- (ii) a comprehensive income and livelihood restoration program has been established in accordance with the RP.

Indigenous Peoples

11. Where the need arises, the Borrower shall ensure or cause the EA and relevant IA to ensure that the preparation, design, construction, implementation and operation of the Project, and all Project facilities comply with (i) all applicable laws and regulations of the Borrower and the State relating to indigenous peoples; (ii) the Indigenous Peoples Safeguards of ADB; and (iii) all measures and requirements set forth in the IPF and in the respective IPP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.

Human and Financial Resources to Implement Safeguards Requirements

12. The Borrower shall ensure or cause the EA and relevant IA to ensure

- (a) that all necessary budgetary and human resources to fully implement the EMMP, the RP, and the IPP as required, are made available; and
- (b) designates at least one official each to supervise implementation of the EMMP, and RP if any.

Safeguards – Related Provisions in Bidding Documents and Works Contracts

13. The Borrower shall ensure or cause the EA and each IA to ensure that all bidding documents and contracts for Works contain provisions that require contractors to:

- (a) comply with the measures and requirements relevant to the contractor set forth in the EIA/IEE, the EMMP, and the RP and the IPP as applicable (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a Safeguards Monitoring Report;
- (b) make available a budget for all such environmental and social measures;
- (c) provide the relevant IA with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks if any, or impacts that arise during construction, implementation or operation of the project that were not considered in the EIA/IEE, the EMMP, and the RP or the IPP if any;

(d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and

(e) fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.

Safeguards Monitoring and Reporting

14. The Borrower shall ensure or cause the EA and each IA to ensure the following:

(a) submit quarterly/semiannual Safeguards Monitoring Reports, as applicable, to ADB through State and disclose relevant information from such reports to affected persons promptly upon submission;

(b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the project that were not considered in the EIA/IEE, the EMMP, and the RP or the IPP as applicable, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan;

(c) no later than award of Works contract/commencement of land acquisition and resettlement activities under first Subproject under any sector engage a qualified and experienced external expert or NGO under a selection process and terms of reference acceptable to ADB, to verify information produced through Project monitoring process, and facilitate the carrying out of any verification activities by such external expert/NGO for all Subprojects under the Project; and

(d) report any breach of compliance with the measures and requirements set forth in the EMMP, and the RP or the IPP if any, promptly after becoming aware of the breach.

Prohibited List of Investments

15. The Borrower shall ensure or cause the EA and each IA to ensure that no proceeds of the loan under the Project are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of ADB's Safeguard Policy Statement (2009).

Other Social Measures

16. The EA through each IA shall ensure that civil works contracts under the Project follow all applicable labor laws of the Borrower and State and that these further include provisions to the effect that contractors; (i) carry out HIV/AIDS awareness programs for labor and disseminate information at worksites on risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction; and (ii) follow and implement all statutory provisions on labor (including not employing or using children as labor, equal pay for equal work), health, safety, welfare, sanitation, and working conditions. Such contracts will also include clauses for termination in case of any breach of the stated provisions by the contractors.

Gender

17. The EA and each IA shall ensure that the Project's Gender Action Plan (GAP) will be fully implemented as agreed between ADB, the Borrower, EA and the IAs, as referred in the PAM.

Communications Strategy

18. The EA and each IA shall ensure that the Project is undertaken in conformity with the Communication Strategy as agreed between ADB, the Borrower, EA, and the IAs, as referred in the PAM.

Procurement

19. The EA and each IA shall ensure that the anticorruption provisions acceptable to ADB, the Borrower, EA, and IAs are included in all bidding documents and contracts financed by ADB in connection with the Project, including provisions specifying the right of ADB to review and examine the records and accounts of State, SDMA, the IAs, and all contractors, suppliers, consultants, and other service providers as they relate to the Project.

20. The EA and each IA shall announce the Project and business opportunities associated with the Project on its respective website. The website will disclose the following information in relation to goods and services procured for the Project: (i) the list of participating bidders, (ii) the name of the winning bidder, (iii) the amount of the contracts awarded, and (iv) the goods and services procured.

Quality Control and Performance Audit

21. The EA shall ensure that the IAs ensure (i) that the rehabilitation and reconstruction of infrastructure effected under the Emergency include strengthened seismic, high winds, and high flood resistance provisions; (ii) monitor and ensure quality control of materials used for the rehabilitation and reconstruction of the infrastructure effected under the Emergency, and ensure that contractors engaged under the Project are technically competent and cleared by the EA in this regard; and (iii) undertake semi-annual performance audit during Subprojects' implementation to determine the degree to which the Project funds have been effectively and efficiently utilized to implement the Project, and achieved its objectives, outputs, and performance indicators.

Governance, Transparency, and Anticorruption

22. The Borrower, EA, and each IA, shall comply with ADB's Anticorruption Policy (1998, as amended to date) and will allow and assist ADB's representatives to carry out random spot checks on the work in progress, utilization of funds for the Project/Subprojects and its implementation.

23. The Borrower, EA, and each IA will ensure that the anticorruption provisions acceptable to ADB, the Borrower, State, SDMA and IAs are included in all bidding documents and contracts financed by ADB in connection with the Project, including provisions specifying the right of ADB to review and examine the records and accounts of

State, SDMA and each IA, and all contractors, suppliers, consultants, and other service providers as they relate to the Project.

24. In addition to procurement related information as stipulated under paragraph 20 of this Schedule, the State shall ensure that the websites of the EA and each IA shall publicly disclose Project and Subprojects' information on use of ADB Loan proceeds and procedures on Subprojects' implementation including community participation. The information shall include inter alia, financial statements, track procurement awards, and status of rehabilitation and reconstruction, funding commitment from other donors and status update on the Project and Subprojects' implementation.

Special Audit

25. The Borrower shall ensure that within 3 months of completion of the Subprojects and Project, a special independent post-completion audit is conducted in accordance with the *ADB's Disaster and Emergency Assistance Policy (2004)* focusing on Project implementation, governance, transparency, and financial accountability.

Project Performance Monitoring System

26. Without limiting the requirements of setting up the Project Performance Monitoring System (PPMS) as detailed in the PAM, the EA shall ensure through the IAs that benefit monitoring, progress and achievements of the Project objectives are undertaken with due participation and feedback of the affected people, non-governmental and community based organizations.

LOAN NUMBER 3055-IND

PROJECT AGREEMENT
(Uttarakhand Emergency Assistance Project)

between

ASIAN DEVELOPMENT BANK

and

STATE OF UTTARAKHAND
STATE DISASTER MANAGEMENT AUTHORITY

DATED 05 February 2014

IND 47229

PROJECT AGREEMENT

PROJECT AGREEMENT dated 05 February 2014 between ASIAN DEVELOPMENT BANK ("ADB") on the one Part, and the State of Uttarakhand acting by its Governor ("State"), and the State Disaster Management Authority ("SDMA") on the Other hand.

WHEREAS

(A) by a Loan Agreement of even date herewith between India ("Borrower") and ADB, ADB has agreed to make to the Borrower a loan of two hundred million Dollars (\$200,000,000) on the terms and conditions set forth in the Loan Agreement, but only on the condition that the proceeds of the loan be made available to the State and through the State to SDMA, and that the State and SDMA agree to undertake certain obligations towards ADB set forth herein; and

(B) the State and SDMA, in consideration of ADB entering into the Loan Agreement with the Borrower, have agreed to undertake the obligations set forth herein;

NOW THEREFORE the parties hereto agree as follows:

ARTICLE I

Definitions

Section 1.01. Wherever used in this Project Agreement, unless the context otherwise requires, the several terms defined in the Loan Agreement and in the Loan Regulations (as so defined) have the respective meanings therein set forth.

ARTICLE II

Particular Covenants

Section 2.01. (a) The State and SDMA shall carry out the Project with due diligence and efficiency, and in conformity with sound applicable technical, financial, business, and development practices.

(b) In the carrying out of the Project and operation of the Project facilities, the State and SDMA shall perform all obligations set forth in the Loan Agreement to the extent that they are applicable to State and SDMA.

Section 2.02. The State and SDMA shall make available, promptly as needed, the funds, facilities, services, land and other resources as required, in addition to the proceeds of the Loan, for the carrying out of the Project.

Section 2.03. (a) In the carrying out of the Project, the State and SDMA shall employ competent and qualified consultants and contractors, acceptable to ADB, to an extent and upon terms and conditions satisfactory to ADB.

(b) Except as ADB may otherwise agree, the SDMA shall procure all items of expenditures to be financed out of the proceeds of the Loan in accordance with the provisions of Schedule 4 to the Loan Agreement. ADB may refuse to finance a contract where any such item has not been procured under procedures substantially in accordance with those agreed between the Borrower and ADB or where the terms and conditions of the contract are not satisfactory to ADB.

Section 2.04. The State and SDMA shall carry out the Project in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to ADB. The State and SDMA shall furnish, or cause to be furnished, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.

Section 2.05. (a) The State and/ SDMA as appropriate, shall take out and maintain with responsible insurers, or make other arrangements satisfactory to ADB for, insurance of Project facilities to such extent and against such risks and in such amounts as shall be consistent with sound practice.

(b) Without limiting the generality of the foregoing, the State and/or as appropriate, SDMA undertake to insure, or cause to be insured, the Goods to be procured, including imported, for the Project against hazards incident to the acquisition, transportation and delivery thereof to the place of use or installation, and for such insurance any indemnity shall be payable in a currency freely usable to replace or repair such Goods.

Section 2.06. The State acting through SDMA shall maintain, or cause to be maintained, records and accounts adequate to identify the items of expenditure financed out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, its operations and financial condition.

Section 2.07. (a) ADB, the State, and SDMA shall cooperate fully to ensure that the purposes of the Loan will be accomplished.

(b) The State and SDMA shall promptly inform ADB of any condition which interferes with, or threatens to interfere with, the progress of the Project, the performance of its respective obligations under this Project Agreement or the Financing arrangements, or the accomplishment of the purposes of the Loan.

(c) ADB, the State and SDMA shall from time to time, at the request of any party, exchange views through their representatives with regard to any matters relating to the Project, State and SDMA and the Loan.

Section 2.08. (a) In so far as it relates to the Project, the State and SDMA shall furnish to ADB all such reports and information as ADB shall reasonably request concerning (i) the Loan and the expenditure of the proceeds thereof; (ii) the items of expenditure financed out of such proceeds; (iii) the Project; (iv) the administration, operations and financial condition of SDMA and status of the State; and (v) any other matters relating to the purposes of the Loan.

(b) Without limiting the generality of the foregoing, The State and SDMA shall furnish to ADB periodic reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the period under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following period.

(c) Promptly after physical completion of the Project, but in any event not later than 3 months thereafter or such later date as ADB may agree for this purpose, the State through SDMA shall prepare and furnish to ADB a report, in such form and in such detail as ADB shall reasonably request, on the execution and initial operation of the Project, including its cost, the performance by the State and SDMA of its respective obligations under this Project Agreement and the accomplishment of the purposes of the Loan.

Section 2.09. (a) The State through SDMA shall (i) maintain separate accounts and records for the Project; (ii) prepare annual financial statements for the Project in accordance with accounting principles acceptable to ADB; (iii) have such financial statements for the Project audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a report (which includes the auditors' opinion on the financial statements, use of the Loan proceeds and compliance with the financial covenants of the Loan Agreement as well as on the use of the procedures for imprest fund(s) and statement of expenditures) and a management letter (which sets out the deficiencies in the internal control of the Project that were identified in the course of the audit, if any); and (v) furnish to ADB, no later than 6 months after the close of the fiscal year to which they relate, copies of such audited financial statements, audit report and management letter, all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.

(b) ADB shall disclose the annual audited financial statements for the Project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website.

(c) In addition to annual audited financial statements referred to in subsection (a) hereinabove, the SDMA shall (i) provide its annual financial statements prepared; (ii) have its financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; and (iii) furnish to ADB, no later than 1 month after approval by the relevant authority, copies of such audited financial statements in the English language and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.

(d) The State and SDMA shall enable ADB, upon ADB's request, to discuss the financial statements for the Project, and SDMA and its financial affairs where they relate to the Project with the auditors appointed by the State and/or SDMA pursuant to subsections (a)(iii) and (c) hereinabove, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of State and SDMA, unless the State and SDMA shall otherwise agree.

Section 2.10. The State and SDMA shall enable ADB's representatives to inspect the Project, the Goods and Works and any relevant records and documents.

Section 2.11. (a) The State and SDMA shall, promptly as required, take all action within its powers to maintain its legal existence, to carry on its operations, and to acquire, maintain and renew all rights, properties, powers, privileges and franchises which are necessary in the carrying out of the Project or in the conduct of its operations.

(b) In so far as it relates to the Project, the State and SDMA shall at all times conduct its operations in accordance with sound applicable technical, financial, business, development and operational practices, and under the supervision of competent and experienced management and personnel.

(c) The State and SDMA shall cause that the IAs at all times operate and maintain its plants, equipment and other property, and from time to time, promptly as needed, make all necessary repairs and renewals thereof, all in accordance with sound applicable technical, financial, business, development, operational and maintenance practices.

Section 2.12. Except as ADB may otherwise agree, the State and SDMA shall ensure that the IAs shall not sell, lease or otherwise dispose of any of its assets which shall be required for the efficient carrying on of its operations or the disposal of which may prejudice its ability to perform satisfactorily any of its obligations under this Project Agreement.

Section 2.13. Except as ADB may otherwise agree, the State and SDMA shall apply the proceeds of the Loan to the financing of expenditures on the Project in accordance with the provisions of the Loan Agreement and this Project Agreement, and shall ensure that all items of expenditures financed out of such proceeds are used exclusively in the carrying out of the Project.

Section 2.14. Except as ADB may otherwise agree, the State and SDMA shall duly perform all its respective obligations under the Financing Arrangements, and shall not take, or concur in, any action which would have the effect of assigning, amending, abrogating or waiving any rights or obligations of the parties under the Financing Arrangements.

Section 2.15. The State and SDMA shall promptly notify ADB of any proposal to amend, suspend or repeal any provision of its respective constitutional documents, which, if implemented, could adversely affect the carrying out of the Project or

the operation of the Project facilities. The State and SDMA shall afford ADB an adequate opportunity to comment on such proposal prior to taking any affirmative action thereon.

ARTICLE III

Effective Date; Termination

Section 3.01. This Project Agreement shall come into force and effect on the date on which the Loan Agreement comes into force and effect. ADB shall promptly notify the State and SDMA of such date.

Section 3.02. All the provisions of this Project Agreement shall continue in full force and effect notwithstanding any cancellation or suspension under the Loan Agreement.

ARTICLE IV

Miscellaneous

Section 4.01. Any notice or request required or permitted to be given or made under this Project Agreement and any agreement between the parties contemplated by this Project Agreement shall be in writing. Such notice or request shall be deemed to have been duly given or made when it shall be delivered by hand, mail or facsimile to the party to which it is required or permitted to be given or made at its address hereinafter specified, or at such other address as such party shall have designated by notice to the party giving such notice or making such request. The addresses so specified are:

For ADB

Asian Development Bank
6 ADB Avenue
Mandaluyong City
1550 Metro Manila
Philippines

Facsimile Numbers:

(0091) 11-24107200
(0091) 11-24194239.

For the State of Uttarakhand

Additional Chief Secretary
Government of Uttarakhand
Secretariat
Dehradun -248001
Uttarakhand

Facsimile Number:

(0091)135-2712098

For the State Disaster Management Authority

Member Secretary
State Disaster Management Authority
Secretariat
Dehradun -248001
Uttarakhand

Facsimile Number:

(0091)-135-2719917.

Section 4.02. (a) Any action required or permitted to be taken, and any documents required or permitted to be executed, under this Project Agreement by or on behalf of (i) the State may be taken or executed by its Additional Chief Secretary; and (ii) by SDMA may be taken or executed by its Member Secretary, or by such other person or persons as he or she shall so designate respectively, in writing notified to ADB.

(b) The State and SDMA shall furnish to ADB sufficient evidence of the authority of each person who will act under subsection (a) hereinabove, together with the authenticated specimen signature of each such person.

Section 4.03. No delay in exercising, or omission to exercise, any right, power or remedy accruing to either party under this Project Agreement upon any default shall impair any such right, power or remedy or be construed to be a waiver thereof or an acquiescence in such default; nor shall the action of such party in respect of any default, or any acquiescence in any default, affect or impair any right, power or remedy of such party in respect of any other or subsequent default.

IN WITNESS WHEREOF the parties hereto, acting through their representatives thereunto duly authorized, have caused this Project Agreement to be signed in their respective names as of the day and year first above written, and to be delivered at the principal office of ADB.

ASIAN DEVELOPMENT BANK

By 
M. Teresa Kho
Country Director

STATE OF UTTARAKHAND

By 
Rakesh Sharma
Additional Chief Secretary

STATE DISASTER MANAGEMENT
AUTHORITY

By 
Bhaskaranand Joshi
Secretary
Disaster Management Department

Appendix XII

Table showing the UNSDGs, related Indicators, the Targets and Priorities under SFDRR relevant to the study

Source: Sendai Framework for Disaster Risk Reduction; A/RES/69/283 United Nations, 23 June 2015 [What is the Sendai Framework? | UNDRR](#)

UNSDGs Target and Questionnaire themes		
	Description	Remarks
Goal 01: No Poverty; assessed by 3 rd theme PCI	End Poverty in all its forms everywhere	Target 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters. Target 1.a.2 Proportion of total government spending on essential services (education, health and social protection)
Goal 03: Good health and Well Being; assessed by 2 nd theme Health	Ensure healthy life and promote well-being for all at all ages.	Target 3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births Target 3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births Target 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health -care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

<i>Goal 04:</i> Quality Education; assessed by 1st theme Education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Target 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes Target 4.a specifically provides to 'Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.
<i>Goal 10:</i> Reduced Inequalities; assessed by 3 rd theme PCI	Reduce inequality within and among countries.	Target 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average Target 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.
<i>Social Capital and wellbeing;</i> 4 th theme itself.	Social goods (trust, solidarity, helpfulness, friendliness and hospitality) is a interdisciplinary non-material core asset to achieving the SDG. (<i>Piao et al., 2021</i>)	One of the specific goals (SDG#3) of the Agenda-2030 is the well-being of society. The State strives to achieve this goal by increasing built capital and social services (Sartori and Catalano, 2013; Winata and Rarasati, 2017). The other form of capital that can strengthen community bonds and improve well-being is termed as social capital. Besides income, happiness too determines the level of community well-being. The principle is that a prosperous individual must like his own life so as to have high levels of life satisfaction (Diener et al., 2009).
SFDRR		
<i>Target C;</i> assessed by 5 th theme SFDRR	Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030	Preamble Over a 20-year time-frame, disasters have continued to exact a heavy toll affecting the well-being and safety of communities and countries as a whole. Overall, more than 1.5 billion people have been affected. The last decade was the worst on record for global economic losses from natural disasters, amounting to \$3 trillion - over a trillion more than the previous decade that significantly impeded progress towards sustainable development.

		Economic losses are making it an uphill battle to hold on to development gains in low- and middle-income countries (Anon, 2019) Severe inequalities of burden sharing exist between low- and high-income countries, with the poorest bearing the highest toll and greatest costs of disasters. Human and asset losses relative to GDP tend to be higher in the countries with the least capacity to prepare, finance and respond to disasters and climate change (GAR-UNDRR, 2015)
<i>Target D;</i> assessed by 5th theme SFDRR	Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030	Guiding Principle (c) Managing the risk of disasters is aimed at protecting persons and their property, health, livelihoods and productive assets, as well as cultural and environmental assets, while promoting and protecting all human rights, including the right to development;
<i>Priorities</i>		
<i>Priority #03;</i> assessed by 5th theme SFDRR	Investing in disaster risk reduction for resilience	National and Local levels: 30(c) To strengthen, as appropriate, disaster-resilient public and private investments, particularly through structural, non-structural and functional disaster risk prevention and reduction measures in critical facilities, in particular schools and hospitals and physical infrastructures; building better from the start to withstand hazards through proper design and construction, including the use of the principles of universal design and the standardization of building materials; retrofitting and rebuilding; nurturing a culture of maintenance; and taking into account economic, social, structural, technological and environmental impact assessments; (h) To encourage the revision of existing or the development of new building codes and standards and rehabilitation and reconstruction practices at the national or local levels, as appropriate, with the aim of making them more applicable within the local context, particularly in informal and marginal human settlements, and reinforce the capacity to implement, survey and enforce such codes through

		an appropriate approach, with a view to fostering disaster-resistant structures; (o) To increase business resilience and protection of livelihoods and productive assets throughout the supply chains, ensure continuity of services and integrate disaster risk management into business models and practices;
<i>Priority #04</i> assessed by 5th theme SFDRR	Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction	33. c) To promote the resilience of new and existing critical infrastructure, including water, transportation and telecommunications infrastructure, educational facilities, hospitals and other health facilities, to ensure that they remain safe, effective and operational during and after disasters in order to provide life-saving and essential services; g) To ensure the continuity of operations and planning, including social and economic recovery, and the provision of basic services in the post-disaster phase; k) To develop guidance for preparedness for disaster reconstruction, such as on land-use planning and structural standards improvement, including by learning from the recovery and reconstruction programmes over the decade since the adoption of the Hyogo Framework for Action, and exchanging experiences, knowledge and lessons learned; i) To consider the relocation of public facilities and infrastructures to areas outside the risk range, wherever possible, in the post-disaster reconstruction process, in consultation with the people concerned, as appropriate;

Appendix XIII

Table showing the section-wise key expressions and phrases stated by the respondents in open-ended questions.

Source: The open-ended ruminations of senior civil servants and disaster-managers collected as part of the project, 2022

Respondent (with Department)	Question I	Question II	Question III
DRM Specialist I, World Bank-MDB	Development Paradigm, Hazard Profile, Vulnerability, Exposure, Climate Change factors, Hydrometeorological- Geological events, Interconnectedness, Cascades, Development footprints, Control rules, Infrastructure nodes, suboptimal Incident response, biggest SAR, RRF	DRR actions, DRA- DSS, Scalable mitigation measures, building-on challenging, Risk information, Codal provisions, Life safety, Repeat event, High magnitude-low frequency events, Vulnerability growing, Risk spreading	Infrastructure Resilience, Community Adaptation, Residual- new added-risk, Infrastructure interdependency de- risking, Climate extremes, Geophysical events, Long term financing
Chief Engineer, PWD-ENG	Cloudburst-Rainfall, Disruption Infrastructure, proficient response, Evacuation, Capacity building.	Capacity building, Resource management, Disaster resilient	Risk reduction infrastructure investments
Executive Engineer, PWD- ENG	Abnormal heavy rainfall, Cloudburst, Flash-floods, Human loss, Devastation, Strategic public infrastructure, Development assistance, Response, Capacity building	Risk assessment, public infrastructure, Connectivity, Socio- economic condition, Coordination deficit, DRR integration, Development planning	State response, Capacity building, Infrastructure restoration-retrofit, Advanced EWS, Technical capability

DRM Consultant, World Bank-MDB	GLOF, heavy rains, floods, Pilgrims stranded, Infrastructure breakdown, biggest evacuation, Scenario planning, DALA	Understanding risk, Impact forecasting, Dissemination infrastructure, naïve SDRF, Community training, Development planning, IRS, USDMA devalued	State's Response capacity, SDRF creation, DRA, Resilient Critical Infrastructure, Performance level, Risk perception, Risk information, Development
DRM Specialist II, World Bank-MDB	Extreme rain event, Cascade, Impact huge, State preparedness, Scale and complexity	DRA, State Response, Vulnerability build-up, Development model, Mainstream DRR, Development planning, Science- technology fusion	RRI, Vulnerability, Repeat event
Sr Consultant. USDMA-DMFR	Worst disaster, Unprecedented rainfall, Destruction, Large population cut- off, Infrastructure damage, Livelihoods, Development facets, DRR integrated into development, RRF, Public awareness	Infirmities exposed, Preparedness, Mitigation, Reconstruction- Recovery, SDMA/DDMA effective, EWS- forecasting, Resilient Telecommunication- Connectivity, Specialised response force, Exercise DRA	DRA, Understanding risks, DRDB, Catastrophe risk modelling, Risk inventory, Decision- making, Planning
ED, USDMA- DCMA	Abnormal meteorological behaviour, human congregation, Massive infrastructure loss, Civic service disruption, State response, Shortcomings, Redundant infrastructure, Institutional paralysis	Climate change prominence, Flash- flood recent, Extreme incidents recurrence, Capital investment, Socio-economic development, Risk transfer instruments	Tourist influx tracking, DRA, Advanced Forecasting-EWS, Strategic Infrastructure, Telecom, Air connectivity, Institutional functioning, Policy Paradox, Civil society, Innovative research

APD, UDRP-DCMA	Major Disaster, Landslides, Heavy rainfall, Critical Infrastructure loss, State's response, Limited resources, Climatic conditions, Dependency	Extreme events impact, Preventive measures, Structural, Socio-economic measures, Multisectoral planning, DRR-Climate change linked,	Capacity building, Local Institutions, First responders, State' technical capacity, EWS
Sr DRM Consultant, World Bank-MDB	Not filled/Left blank	Strategic approach, Long term resilience, Preparedness, Vulnerability context, Climate change.	Infrastructure interventions impact, Assessment comprehensive
Sr Finance Specialist, World Bank-MDB (private capacity)	Enormous tragedy, Rescue level, Heavy rains, Chorabari glacier, Floods, Public infrastructure breakdown, State response, EWS, Disaster force, Pilgrim influx	Disaster prone, more informed, Reaction to EWS stimuli, Prevention, Infrastructure resilience-retrofit, DRR integration, Controls enforcement, DSS, Interagency coordination, Life-livelihood loss, Satellite communication, Resource constraints	Risk aware, Infrastructure resilience-retrofit, DRR integration, Community Adaptation
Secretary, Finance Department-GoUK	Heavy rainfall, Flooding, Congregation, Climate Change, State response, Advanced Warning mechanism, DRTs, Envisaged not, Unprecedented disaster, Multilateral Development assistance, Resilience, Disaster preparedness, known knowns	Pilgrim influx, Climate change, Hz-Vu-Ex increasing, Coping capability, DRA, Advanced EWS, Close monitoring, SDRF-DRTs, Communication plans, Resource repository, Development control compliance, Field trainings, Adaptation-coping, Interagency coordination, Life-livelihood loss, SOPs,	Risk awareness building, Political compulsion, Policy priority, RRI in CI and PB, Knowledge level, Technical Capacity, Community participation, Sustained sensitivity, Forecast-Warning-Advisory dissemination, Simulation drills-practice, Training

		DSS, Feedback loops, Risk awareness, Science Technology- Risk fusion,	
JS, Finance Department-Gol	Glacier breach, State action, Multidepartment response	EWS, Data inflow, Information dissemination, SOPs, DSS, Effective response, Resilience, Livelihood- Infrastructure impact, Inclusive planning, Mainstream DRR, Interagency coordination, Strong Institutional mechanism.	USDMA, Institutional strengthening, SDRF, First responders training, DRR integration

Appendix XIV

Rcode for Likert Diagrams

```

#Appendix XIV
#Rcode for Likert Diagrams

##Install HH package (click Tools> Install package, search HH)
setwd("N:/IRDR0004/R/Thesis work")
library(dplyr)
library(tidyverse)
library(tidyr)
library(likert)
library(HH)

#Import data
response<-read.csv(file="Response Data Likert.csv", header=TRUE, sep = ',')

#subset education
Education<-response[,c(2:13)]
Education[Education == 1] <- "Strongly Disagree"
Education[Education == 2] <- "Disagree"
Education[Education == 3] <- "Neither Agree Nor Disagree"
Education[Education == 4] <- "Agree"
Education[Education == 5] <- "Strongly Agree"

for(i in 1:12){
  Education_2[,i] <- as.factor(Education_2[,i])
  levels(Education[,i])<-c("Strongly Agree","Agree","Neither Agree Nor
Disagree","Disagree","Strongly Disagree")
  i=i+1
  print(i)
}

## Create frequency table for each coloumn

lvls <- unique(unlist(Education))
freq <- sapply(Education, function(x) table(factor(x, levels = lvls,
ordered = TRUE)))

#transpose freq table & create data frame
freq<- as.data.frame(t(freq))
#Add question name
Names <- c("School Continuity", "Seismic Intervention", "Structural Safety",
"Parents' Confidence", "Attendance-Damage", "Attendance-
Connectivity",
"Service Commitment","Enrolment Ratio","Retention Rate",
"Redundancy-Resilience", "Gender parity", "Safety concerns")
freq <- cbind(Names,freq)
#reorder options
freq<- freq[,c(1,4,3,5,2,6)]
#create education chart## col=c('red','blue','#4AB3F2','red','blue'),
names_test <- rev(freq$Names)

likert(Names ~.,data=freq, main="Education (Likert Diagram)", xlab="No. of
Responses", ylab="",

par.ylab.text = list(font=1,face=1,fontfamily="serif"), scales=list(
y=list(

```

```

        labels= names_test,
        tck=0.5)),xlimEqualLeftRight=FALSE
    )
##### Health #####

Health<-response[,c(14:24)]
Health[Health == 1] <- "Strongly Disagree"
Health[Health == 2] <- "Disagree"
Health[Health == 3] <- "Neither Agree Nor Disagree"
Health[Health == 4] <- "Agree"
Health[Health == 5] <- "Strongly Agree"

for(i in 1:11){
  Health_2[,i] <- as.factor(Health_2[,i])
  levels(Health[,i])<-c("Strongly Agree","Agree","Neither Agree Nor
Disagree","Disagree","Strongly Disagree")
  i=i+1
  print(i)
}

## Create frequency table for each coloumn

lvlsh <- unique(unlist(Health))
freqh <- sapply(Health, function(x) table(factor(x, levels = lvlsh,
                                                ordered = TRUE)))

#transpose freq table & create data frame
freqh<- as.data.frame(t(freqh))
#Add question name
Namesh <- c("Hospital Continuity","Seismic Intervention","Community
Confidence",
            "Attendance-Structure","Attendance-Connectivity","Professional
Sincerity","Patient Influx",
            "Redundancy-Resilience","Institutional Deliveries", "Child
Immunization","Service Quality" )

freqh <- cbind(Namesh,freqh)
#reorder options
freqh<- freqh[,c(1,6,3,4,2,5)]
#create health chart
namesh_test <- rev(freqh$Namesh)
likert(Namesh ~.,data=freqh, main="Health (Likert Diagram) ", xlab="No. of
Responses", ylab="",
      par.ylab.text = list(font=1,face=1,fontfamily="serif"), scales=list(
        y=list(
          labels=namesh_test,
          tck=0.5)),xlimEqualLeftRight=FALSE
    )
##### PCI #####

PCI<-response[,c(25:38)]
PCI[PCI == 1] <- "Strongly Disagree"
PCI[PCI == 2] <- "Disagree"
PCI[PCI == 3] <- "Neither Agree Nor Disagree"
PCI[PCI == 4] <- "Agree"

```

```

PCI[PCI == 5] <- "Strongly Agree"

for(i in 1:14){
  PCI_2[,i] <- as.factor(PCI_2[,i])
  levels(PCI[,i])<-c("Strongly Agree","Agree","Neither Agree Nor
Disagree","Disagree","Strongly Disagree")
  i=i+1
  print(i)
}

## Create frequency table for each coloumn

lvlsp <- unique(unlist(PCI))
freqp <- sapply(PCI, function(x) table(factor(x, levels = lvlsp,
                                             ordered = TRUE)))

#transpose freq table & create data frame
freqp<- as.data.frame(t(freqp))
#Add question name
Namesp <- c("Labour Productivity","Livelihood Security","Consumption
Expenditure",
            "Robust Supply Chain","Essential Supplies Continuity","Savings
Ability",
            "Financial Inclusion","Transportation Delays","Distress
Pricing","Freight Transportation",
            "Passenger Transportation","Fuel Efficiency","Entrepreneurship-
Occupation","Industry Linkages")

freqp <- cbind(Namesp,freqp)
#reorder options
freqp<- freqp[,c(1,6,4,2,3,5)]
namesp_test <- rev(freqp$Namesp)
#create education chart
likert(Namesp ~.,data=freqp, main="PCI (Likert Diagram)", xlab="No. of
Responses", ylab="",
      par.ylab.text = list(font=1,face=1,fontfamily="serif"), scales=list(
        y=list(
          labels=namesp_test,
          tck=0.5)),xlimEqualLeftRight=FALSE
)

##### SCWB #####
SCWB<-response[,c(39:49)]
SCWB[SCWB == 1] <- "Strongly Disagree"
SCWB[SCWB == 2] <- "Disagree"
SCWB[SCWB == 3] <- "Neither Agree Nor Disagree"
SCWB[SCWB == 4] <- "Agree"
SCWB[SCWB == 5] <- "Strongly Agree"

for(i in 1:11){
  SCWB_2[,i] <- as.factor(SCWB_2[,i])
  levels(SCWB[,i])<-c("Strongly Agree","Agree","Neither Agree Nor
Disagree","Disagree","Strongly Disagree")
  i=i+1
}

```

```

    print(i)
  }

## Create frequency table for each coloumn

lvlss <- unique(unlist(SCWB))
freqs <- sapply(SCWB, function(x) table(factor(x, levels = lvlss,
                                              ordered = TRUE)))

#transpose freq table & create data frame
freqs<- as.data.frame(t(freqs))
#Add question name
Namess <- c("Perception-Governance","Bounce time","Service Access","Service
Standards",
           "Participation Levels","Harmony-Interaction","Beyond Survival",
           "Demographic Immigration","Youth Retention","Festive Engagements",
           "Collective Risk Management")

freqs <- cbind(Namess,freqs)
#reorder options
freqs<- freqs[,c(1,4,3,5,2,6)]
namess_test<-rev(freqs$Namess)
#create education chart
likert(Namess ~.,data=freqs, main="SCWB (Likert Diagram)", xlab="No. of
Responses", ylab="",
      par.ylab.text = list(font=1,face=1,fontfamily="serif"), scales=list(
        y=list(
          labels=namess_test,
          tck=0.5)),xlimEqualLeftRight=FALSE
)

##### SFDRR #####
SFDRR<-response[,c(50:64)]
SFDRR[SFDRR == 1] <- "Strongly Disagree"
SFDRR[SFDRR == 2] <- "Disagree"
SFDRR[SFDRR == 3] <- "Neither Agree Nor Disagree"
SFDRR[SFDRR == 4] <- "Agree"
SFDRR[SFDRR == 5] <- "Strongly Agree"

for(i in 1:15){
  SFDRR_2[,i] <- as.factor(SFDRR_2[,i])
  levels(SFDRR[,i])<-c("Strongly Agree","Agree","Neither Agree Nor
Disagree","Disagree","Strongly Disagree")
  i=i+1
  print(i)
}

## Create frequency table for each coloumn

lvlssf <- unique(unlist(SFDRR))
freqsf <- sapply(SFDRR, function(x) table(factor(x, levels = lvlssf,
                                              ordered = TRUE)))

#transpose freq table & create data frame

```

```

freqsf<- as.data.frame(t(freqsf))
#Add question name
Namesf <- c("Infrastructure Strength","Structural Mitigation","Connectivity
Disruption",
           "Infra-service stability","Operational Endurance","Risk
sensitization",
           "Ex-ante intervention","Infrastructure downtime","Public
anxiety",
           "Business Continuity","Risk Assessment","Knowledge Transfer",
           "Organic Capacity building","Understanding Risk","Reaction-
Stimuli")
freqsf <- cbind(Namesf,freqsf)
#reorder options
freqsf<- freqsf[,c(1,6,3,4,2,5)]
namesf_test<-rev(freqsf$Namesf)
#create education chart
likert(Namesf ~.,data=freqsf, main="SFDRR (Likert Diagram)", xlab="No. of
Responses", ylab="",
       par.ylab.text = list(font=1,face=1,fontfamily="serif"), scales=list(
         y=list(
           labels=namesf_test,
           tck=0.5)),xlimEqualLeftRight=FALSE
)

```

Appendix XV

Rcode for Error Bar Plots

```

#Appendix XV
#Rcode for Error Bar plots

setwd("N:/IRDR0004/R/Thesis work")
d1<-read.csv(file="Response Data.csv", header=TRUE, sep = ',')
d1
summary(d1)
d1[64:84, 1] <- "UA"

## aggregate by department
d2_mean<-aggregate(d1, list(by=d1$Category), FUN = mean)
## remove the second column(category)
d2_mean <- d2_mean[,-2]
colnames(d2_mean)[1] <- "category"

## Standard Deviation
d2_sd<-aggregate(d1, list(by=d1$Category), FUN = sd)
d2_sd <- d2_sd[,-2]
colnames(d2_sd)[1] <- "category"

## Categorize by domain
## 1. Education
d2_mean_edu <- d2_mean[, 1:13]
d2_sd_edu <- d2_sd[, 1:13]

## Wide to long format
library(reshape2)
long_edu_mean <- melt(d2_mean_edu, id.vars = c("category"))
long_edu_sd <- melt(d2_sd_edu, id.vars = c("category"))

## this long data set can be used for ggplot2 now, with each question
## combine the two dataset
long_edu_mean$id <- paste0(long_edu_mean$category, long_edu_mean$variable)
long_edu_sd$id <- paste0(long_edu_sd$category, long_edu_sd$variable)
long_edu <- merge(long_edu_mean, long_edu_sd, by = "id")
## tidy the dataset
long_edu <- long_edu[,-c(1,5,6)]
colnames(long_edu) <- c("RESPCAT", "Question", "Mean", "sd")

## 2. Health
d2_mean_heal <- d2_mean[, c(1,14:24)]
d2_sd_heal <- d2_sd[,c(1,14:24)]

## Wide to long
library(reshape2)
long_heal_mean <- melt(d2_mean_heal, id.vars = c("category"))
long_heal_sd <- melt(d2_sd_heal, id.vars = c("category"))

## this long data set can be used for ggplot 2 now, with each question
## combine the two dataset
long_heal_mean$id <- paste0(long_heal_mean$category, long_heal_mean$variable)

```

```

long_heal_sd$id <- paste0(long_heal_sd$category, long_heal_sd$variable)
long_heal <- merge(long_heal_mean, long_heal_sd, by = "id")
## tidy the dataset
long_heal <- long_heal[,-c(1,5,6)]
colnames(long_heal) <- c("RESPCAT", "Question", "Mean", "sd")

## 3. Per Capita Income
d2_mean_PCI <- d2_mean[, c(1,25:38)]
d2_sd_PCI <- d2_sd[,c(1,25:38)]

## Wide to long
library(reshape2)
long_PCI_mean <- melt(d2_mean_PCI, id.vars = c("category"))
long_PCI_sd <- melt(d2_sd_PCI, id.vars = c("category"))

## this long data set can be used for ggplot 2 now, with each question
## combine the two dataset
long_PCI_mean$id <- paste0(long_PCI_mean$category, long_PCI_mean$variable)
long_PCI_sd$id <- paste0(long_PCI_sd$category, long_PCI_sd$variable)
long_PCI <- merge(long_PCI_mean, long_PCI_sd, by = "id")
## tidy the dataset
long_PCI <- long_PCI[,-c(1,5,6)]
colnames(long_PCI) <- c("RESPCAT", "Question", "Mean", "sd")

## 4. Social Capital and Well Being
d2_mean_SC <- d2_mean[, c(1,39:49)]
d2_sd_SC <- d2_sd[,c(1,39:49)]

## Wide to long
library(reshape2)
long_SC_mean <- melt(d2_mean_SC, id.vars = c("category"))
long_SC_sd <- melt(d2_sd_SC, id.vars = c("category"))

## this long data set can be used for ggplot 2 now, with each question
## combine the two dataset
long_SC_mean$id <- paste0(long_SC_mean$category, long_SC_mean$variable)
long_SC_sd$id <- paste0(long_SC_sd$category, long_SC_sd$variable)
long_SC <- merge(long_SC_mean, long_SC_sd, by = "id")
## tidy the dataset
long_SC <- long_SC[,-c(1,5,6)]
colnames(long_SC) <- c("RESPCAT", "Question", "Mean", "sd")

## 5. SFDRR
d2_mean_SF <- d2_mean[, c(1,50:64)]
d2_sd_SF <- d2_sd[,c(1,50:64)]

## Wide to long
library(reshape2)
long_SF_mean <- melt(d2_mean_SF, id.vars = c("category"))
long_SF_sd <- melt(d2_sd_SF, id.vars = c("category"))

```

```
## this long data set can be used for ggplot 2 now, with each question
## combine the two dataset
long_SF_mean$id <- paste0(long_SF_mean$category, long_SF_mean$variable)
long_SF_sd$id <- paste0(long_SF_sd$category, long_SF_sd$variable)
long_SF <- merge(long_SF_mean, long_SF_sd, by = "id")
## tidy the dataset
long_SF <- long_SF[,-c(1,5,6)]
colnames(long_SF) <- c("RESPCAT", "Question", "Mean", "sd")
```

```
#####
```

```
## ggplot2 now, for all 5 RespCat Domain wise
```

```
library(ggplot2)
```

```
#1.Education
```

```
ggplot(long_edu, aes(x=Question, y=Mean, group= RESPCAT, color=RESPCAT)) +
  geom_point(position=position_dodge(0.6), size=1.5)
+geom_errorbar(aes(ymin=Mean-sd, ymax=Mean+sd), width=0.4, size=0.8,
               position=position_dodge(0.6)) + scale_y_continuous(breaks =
c(1,1.5,2,2.5,3,3.5,4,4.5,5),limits = c(1,5)) +
  ggtitle("Education")+
  theme(panel.grid = element_line(colour = "grey",size = 0.5, linetype = 2),
        panel.background = element_blank(), panel.border =
element_rect(colour = "black", fill = NA, size = 0.5),
        panel.grid.major.x
=element_blank(),panel.grid.minor=element_blank(),
axis.text.x=element_text(colour="blue",angle=60,hjust=1,size=rel(1.5)),
        plot.title =
element_text(size=rel(1.4),lineheight=0.4,face="bold",colour="blue"))
+labs(x="Proposition", y="Degree of Spread\n(Mean±SD)")
```

```
#2.Health
```

```
ggplot(long_heal, aes(x=Question, y=Mean, group= RESPCAT , color=RESPCAT)) +
  geom_point(position=position_dodge(0.6), size=1.5)
+geom_errorbar(aes(ymin=Mean-sd, ymax=Mean+sd), width=0.4, size=0.8,
               position=position_dodge(0.6))
+scale_y_continuous(breaks = c(1,1.5,2,2.5,3,3.5,4,4.5,5),limits = c(1,5)) +
  ggtitle("Health")+
  theme(panel.grid = element_line(colour = "grey",size = 0.5, linetype = 2),
        panel.background = element_blank(), panel.border = element_rect(colour
= "black", fill = NA, size = 0.5),
        panel.grid.major.x =element_blank(),panel.grid.minor=element_blank(),
axis.text.x=element_text(colour="dark
magenta",angle=60,hjust=1,size=rel(1.5)),
        plot.title =
element_text(size=rel(1.4),lineheight=0.4,face="bold",colour="dark magenta"))
+
  labs(x="Proposition", y="Degree of Spread\n(Mean±SD)")
```

```
#3.PCI
```

```
ggplot(long_PCI, aes(x=Question, y=Mean, group= RESPCAT , color=RESPCAT)) +
```

```

    geom_point(position=position_dodge(0.6), size=1.5)
+geom_errorbar(aes(ymin=Mean-sd, ymax=Mean+sd), width=0.4, size=0.8,
               position=position_dodge(0.6))
+scale_y_continuous(breaks = c(1,1.5,2,2.5,3,3.5,4,4.5,5),limits = c(1,5)) +
               ggtitle("Per Capita
Income")+
    theme(panel.grid = element_line(colour = "grey",size = 0.5, linetype = 2),
          panel.background = element_blank(), panel.border = element_rect(colour
= "black", fill = NA, size = 0.5),
          panel.grid.major.x =element_blank(),panel.grid.minor=element_blank(),
axis.text.x=element_text(colour="green",angle=60,hjust=1,size=rel(1.5)),
          plot.title =
element_text(size=rel(1.4),lineheight=0.4,face="bold",colour="green")) +
    labs(x="Proposition", y="Degree of Spread\n(Mean±SD)")

#4.SCWB
ggplot(long_SC, aes(x=Question, y=Mean, group= RESPCAT , color=RESPCAT)) +
    geom_point(position=position_dodge(0.6), size=1.5)
+geom_errorbar(aes(ymin=Mean-sd, ymax=Mean+sd), width=0.4, size=0.8,
               position=position_dodge(0.6))
+scale_y_continuous(breaks = c(1,1.5,2,2.5,3,3.5,4,4.5,5),limits = c(1,5)) +
               ggtitle("Social
Capital and Well Being")+
    theme(panel.grid = element_line(colour = "grey",size = 0.5, linetype = 2),
          panel.background = element_blank(), panel.border = element_rect(colour
= "black", fill = NA, size = 0.5),
          panel.grid.major.x =element_blank(),panel.grid.minor=element_blank(),
axis.text.x=element_text(colour="red",angle=60,hjust=1,size=rel(1.5)),
          plot.title =
element_text(size=rel(1.4),lineheight=0.4,face="bold",colour="red")) +
    labs(x="Proposition", y="Degree of Spread\n(Mean±SD)")

#5.SFDRR
ggplot(long_SF, aes(x=Question, y=Mean, group= RESPCAT , color=RESPCAT)) +
    geom_point(position=position_dodge(0.6), size=1.5)
+geom_errorbar(aes(ymin=Mean-sd, ymax=Mean+sd), width=0.4, size=0.8,
               position=position_dodge(0.6))
+scale_y_continuous(breaks = c(1,1.5,2,2.5,3,3.5,4,4.5,5),limits = c(1,5)) +
               ggtitle("Sendai
Framework")+
    theme(panel.grid = element_line(colour = "grey",size = 0.5, linetype = 2),
          panel.background = element_blank(), panel.border = element_rect(colour
= "black", fill = NA, size = 0.5),
          panel.grid.major.x =element_blank(),panel.grid.minor=element_blank(),
axis.text.x=element_text(colour="purple",angle=60,hjust=1,size=rel(1.5)),
          plot.title =
element_text(size=rel(1.4),lineheight=0.4,face="bold",colour="purple")) +
    labs(x="Proposition", y="Degree of Spread\n(Mean±SD)")

```

Appendix XVI (Tables showing theme wise questions and short forms for referral)

1. Education

S no.	Questions	Short titles for referral
1	The instances where the school services got discontinued have been minimal or none.	School Continuity
2	The non-structural seismic interventions as well as BALA (Building as Learning Aid) have extensively been fused into reconstructed schools.	Seismic Intervention
3	The children don't feel unsafe anymore to visit school owing to fear of structural damage during hazards.	Structural Safety
4	The parents don't withhold the children anymore from attending school during monsoonal period.	Parents' Confidence
5	The instances where school-staff become unable to show up because of fear of structural damage have been minimal or none.	Attendance-Damage
6	The instances where school-staff become unable to show up because of disrupted connectivity, have been minimal or none.	Attendance-Connectivity
7	The availability and willingness on part of teachers to stay and serve sincerely have increased (quality of service).	Service Commitment
8	The education enrolment ratio has maximized post such risk-reduction investments in school and roads-bridges.	Enrolment Ratio
9	The retention rate in schools has increased post such risk-reduction investments in school and roads-bridges.	Retention Rate
10	The education and Road-Bridge Engineering Departments' ability to maintain redundancy (in terms of equipment and Human-Resource) and resort to Resilience Manual during hazards has actually increased.	Redundancy-Resilience
11	The girls' attendance at schools has increased.	Gender parity
12	In Parent Teacher Meeting, the locals raise minimal or no concerns about structural integrity of schools or children's safety in monsoons.	Safety concerns

2. Health

13	The instances where the hospital services got discontinued have been minimal or none.	Hospital Continuity
14	The non-structural seismic interventions have extensively been fused into reconstructed hospitals.	Seismic Intervention
15	The community don't feel unsafe anymore to visit hospital owing to fear of structural damage during hazards.	Community Confidence
16	The instances where healthcare staff become unable to show up because of fear of structural damage have been minimal or none.	Attendance-Structure
17	The instances where healthcare staff become unable to show up because of disrupted connectivity have been minimal or none.	Attendance-Connectivity
18	The availability and willingness on part doctors and healthcare staff to stay and serve sincerely have increased (quality of service).	Professional Sincerity
19	The patient influx in the reconstructed hospital has increased.	Patient Influx
20	The Health and Road-Bridge Engineering Departments' ability to maintain redundancy (in terms of equipment and Human-Resource) and resort to Resilience Manual during hazards has actually increased	Redundancy-Resilience
21	The institutional (in hospitals) deliveries have increased thus reducing the Infant Mortality Rate.	Institutional Deliveries
22	The immunization rates of children and mothers have increased.	Child Immunization
23	During community overreach camps, minimal or no queries/complaints are received about structural integrity of Hospitals and services continuity during hazards.	Service Quality

3. Per Capita Income

24	The labor productivity has increased.	Labour Productivity
25	The livelihoods have become more robust and secure.	Livelihood Security
26	The per-capita income and consumption expenditure have increased.	Consumption Expenditure
27	The Supply-Chain networks don't get disrupted now on account of creeping of structural deformities in the reconstructed roads-bridges during hazards.	Robust Supply Chain
28	There has not been any price-increase or supply shortages in essential items (Grocery, Fruits, Vegetables and Household items) in the aftermath of any disaster all this while.	Essential Supplies Continuity
29	The households' ability to save surplus has increased.	Savings Ability
30	As a proxy to increased financial inclusion and growing income level (savings), the number of Banking Financial institution branches have increased. (Income)	Financial Inclusion
31	There has been sheer decline in instances of transportation delays and blocked routes that have incentivized farming, horticulture and animal husbandry in the concerned areas. (Income)	Transportation Delays
32	The incidents of horticulture produce (perishable) confronting distress pricing in the market downhill (plain areas) have decreased. (Income)	Distress Pricing
33	The transportation cost of freight produce (food-grains, pulses, horticulture produce) has decreased. (Income)	Freight Transportation
34	The transportation rent charged by commercial passenger-vehicles has decreased too. (Proxy to transaction cost and income savings)	Passenger Transportation
35	The fuel expenditure incurred on private vehicles (bikes, cars) has gone down (Proxy to transaction cost and income savings).	Fuel Efficiency
36	The number of merchandise shops, taxi-operators, retail outlets among others have notably increased.	Entrepreneurship-Occupation
37	The forward and backward linkage industries related to primary sector have increased.	Industry Linkages

4. Social Capital and Wellbeing

38	The community's disposition/perception towards teachers, medical-staff and Road & Bridge engineers have improved.	Perception-Governance
39	Post the positioning of flood and seismic hazard resilient roads, bridges and conveyance infrastructure, the time taken and cost incurred by the community (adaptation and coping capacity) to return to normalcy has decreased.	Bounce time
40	The Multi-Hazard Resilient Infrastructure (MHRI) has infused highly positive transmission effect on accessing (reduced transaction cost) social and civic services such as school, health, civic supplies, Banking outreach, Post office.	Service Access
41	The Multi-Hazard Resilient Infrastructure (MHRI) has infused highly positive transmission effect on accessing (reduced transaction cost) social and civic services such as school, health, civic supplies, Banking outreach, Post office.	Service Standards
42	The social security levels and participation of locale in collective celebrations, gatherings have increased.	Participation Levels
43	The social harmony, well-being and interaction levels have increased.	Harmony-Interaction
44	The households have moved beyond survival existence (sustenance way of life).	Beyond Survival
45	The demographic pattern of migration is now inclined towards immigration.	Demographic Immigration
46	The retention of youth in the concerned areas has increased. (Proxy to robust livelihoods)	Youth Retention
47	The forward and backward linkage festivities and social-engagements corresponding to the primary sector proliferation have also increased.	Festive Engagements
48	The community has increasingly begun documenting-drafting local Disaster Management plans, first-response & evacuation strategies, inventorying local resources (trained volunteers-material-equipment) for DRR.	Collective Risk Management

5. Sendai Framework for Disaster Risk Reduction

49	The strength and safety (resilience to disaster-shocks) of roads, bridges, schools, hospitals, fire stations have increased.	Infrastructure Strength
50	The structural mitigation features have duly been incorporated for infrastructure reconstruction (connectivity, schools, hospitals) which now are Flood-Seismic Hazard Resilient.	Structural Mitigation
51	The instances of disruption in connectivity during hazards have highly decreased post the multi-hazard resilient bridges and roads construction.	Connectivity Disruption
52	The bridges and roads infrastructure built after 2013 continue their operation without interruption during emergencies.	Infra-service stability
53	The operational continuity of civic & social services has increased during emergency strikes	Operational Endurance
54	The increase in sensitization of school, hospitals, Road & Bridge Engineering departments about DRR preparedness, response, contingency-planning has had a favorable impact on the service continuity	Risk sensitization
55	Had Critical Infrastructure (roads, bridges) and individual housing been hazard-resilient and robust earlier, the losses exacted in 2013 disaster and its impact on normal regimen of the mountain-communities would have been less manifold.	Ex-ante intervention
56	There has been no or rare instance when the services of reconstructed roads, bridges, schools and hospitals, got suspended owing to repair downtimes or damage.	Infrastructure downtime
57	The community's apprehension about structural-collapse of schools or buckling of roads or yielding of bridges has decreased.	Public anxiety
58	The instances where local economic and community business processes (Government offices, essential commodities shops, markets, transportation of goods and passengers, waste management) got discontinued owing to disrupted connectivity have been minimal or none.	Business Continuity
59	The community's perception about Disaster-Risk, and appreciation of scientific knowledge, data and Risk-Assessment has increased.	Risk Assessment
60	The Disaster Risk Reduction knowledge and capacities are increasingly being passed on to children formally through local school curriculum, State sponsored training, simulation drills	Knowledge Transfer

	or informal inter-generation transfer as part of traditions, after the 2013 deluge.	
61	The community and school-children have begun evincing more interest in learning and employing risk-maps, area-specific historic Disaster-loss database, vulnerability profiles, causal factors, hazard catalogue during training and capacity-building sessions.	Organic Capacity building
62	The community and school-children now better understand the concept of exposure as well as appreciate the significance of Hazard resilient construction practices, building-codes and safe sites.	Understanding Risk
63	The locale's vigilance level, action and obedience to the early-warnings, forecasts and advisories issued by the Indian Meteorological Department, State and District Disaster Management Authorities have enhanced reasonably.	Reaction-Stimuli