

This is a repository copy of *Opening space for equity and justice in resilience : A subjective approach to household resilience assessment*.

White Rose Research Online URL for this paper:
<https://eprints.whiterose.ac.uk/172690/>

Version: Accepted Version

Article:

Ensor, Jonathan E. orcid.org/0000-0003-2402-5491, Mohan, Taneesha, Forrester, John orcid.org/0000-0002-8730-2671 et al. (3 more authors) (2021) Opening space for equity and justice in resilience : A subjective approach to household resilience assessment. *Global Environmental Change*. 102251. ISSN 1872-9495

<https://doi.org/10.1016/j.gloenvcha.2021.102251>

Reuse

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

Highlights

- Measuring resilience reifies assumptions by relying on proxy indicators
- Assessment needs methods that place epistemic diversity at the centre
- We rank resilience based on subjective assessment of distance to threshold
- Participatory methods allow high and low resilience groups to narrate experiences
- Resilience root causes and distribution revealed through recognition justice focus

Opening space for equity and justice in resilience: a subjective approach to household resilience assessment

Jonathan E Ensor^{a*}, Taneesha Mohan^a, John Forrester^a, Utpal Kanti Khisa^b, Tasnina Karim^c, Peter Howley^d

^aStockholm Environment Institute, Department of Environment and Geography, University of York, UK

^bPanna Community Development Foundation

^cDepartment of Psychology, University of Bergen

^dLeeds University Business School, University of Leeds

*Corresponding author: jon.ensor@york.ac.uk; +44 7880 552119; Stockholm Environment Institute, Department of Environment and Geography, University of York, UK.

Funding sources:

This work was supported by a British Academy Sustainable Development Programme grant (GF160008), an Economic and Social Research Council (ESRC) Global Challenges Research Fund (GCRF) Equitable Resilience grant (ES/T00259X/1) and the Stockholm Environment Institute's Transforming Development and Disaster Risk Initiative. We would like to express our heartfelt thanks for the life and work of our colleague and friend, Neela Matin, who had a significant role in shaping the research that informed this paper but died before this manuscript was prepared.

1 **Abstract**

2 While resilience has grown to become a well-established goal of policy and practice, assessing
3 resilience remains an outstanding problem. To date, measurement has largely relied on the
4 identification of proxy indicators, inevitably shaping what is measured in ways that reflect
5 underlying assumptions, generalisations and approximations, and raising the question of whose
6 values are being embedded into resilience. These concerns reflect recent interest in the role of
7 recognition justice in resilience, and in particular how marginalisation from meaning-making
8 processes creates the conditions for the inequitable distribution of outcomes in practice. Here, we
9 propose a two stage, subjective approach to resilience assessment, starting with rapid household
10 interviews that invite participants to assess the likely impact of multiple shock and stressor storylines.
11 In a second step, participatory qualitative methods are employed to support inductive investigation
12 of resilience focused on the factors that differentiate those reporting relatively high and low resilience.
13 We illustrate this using fieldwork data from 572 households in Bangladesh. This subjective approach
14 enables households to engage in the production of knowledge about their resilience, revealing two
15 core features of situated heterogeneity: the forms of difference, and the underlying causes.
16 Underlying causes arise from interactions and feedbacks between social, political, economic and
17 institutional conditions that are highly context specific, while significant forms of difference include
18 intra-community and scalar heterogeneity; vulnerability to specific or generalised shocks; and the role
19 of undesirable practices in securing resilience. The results underline the need for resilience to be
20 assessed in relation to local understandings of precarity, and through the expression of senses of
21 justice that inform local conceptions of wellbeing. This means moving beyond positivist approaches
22 and placing epistemic diversity at the centre of resilience assessment, enabling the production of a
23 situated understanding of how and why resilience is differentiated, and offering an analytical starting
24 point from which policy and practice can drive towards equitable resilience.

25

26 **1.0 Introduction**

27 Over the last two decades, increasing the resilience of human and environmental systems has risen to
28 become a central goal of policy and practice across the fields of development, disaster risk reduction
29 and climate change adaptation (Béné et al., 2017; Brown, 2014; Bruijn et al., 2017; Ensor et al., 2016;
30 Thomalla et al., 2018). Yet, while this rise has encompassed multiple different conceptual frameworks
31 and led to a proliferation of practice guides, the fundamental problem of identifying, measuring and
32 monitoring resilience ‘on the ground’ remains outstanding (Cumming et al., 2005; Jones and Tanner,
33 2016; Prior and Haggmann, 2013).

34

35 The majority of the empirical literature to date has focused on the identification and measurement of
36 common resilience characteristics (Bahadur et al., 2013; Quinlan et al., 2016). Yet, at the same time, a
37 growing body of critical literature has focused attention on equity and justice in resilience, pointing to
38 how experiences of resilience are distributed by a complex interplay of local-to-global social, cultural,
39 economic and political factors, rendering resilience highly contextualised or ‘situated’ (Béné et al.,
40 2015; Cote and Nightingale, 2012; Matin et al., 2018; Chu and Michael, 2019). Here, we suggest an
41 alternative analytical starting point for the empirical study of resilience. Rather than attempting to
42 abstract characteristics from across multiple contexts, we focus on how households can rapidly and
43 subjectively assess their own resilience, revealing patterns of differentiation across and between
44 populations and supporting their role in the assessment of the factors that distinguish household
45 experiences.

46

47 A review of empirical literature concerned with resilience in linked human and environmental
48 systems reveals a large body of work looking to uncover critical components (for example, Becker et
49 al., 2019; Béné, 2013; Berkes and Ross, 2013; Kruse et al., 2019; Plummer, 2009) and, less frequently,
50 looking to measure resilience in particular settings (for example, Becker et al., 2019; Béné, 2013;
51 Birkmann, 2013; Cutter et al., 2010). Underlying frameworks play a central role, identifying
52 components and associated structural relations that reflect assumptions about the focus and

53 dynamics of resilience (for a useful summary, see the tables summarising approaches to assessing
54 resilience in Quinlan et al., 2016; Sina et al., 2019). Cutter et al. (2010), for example, make use of the
55 ‘disaster resilience of place’ (DROP) model as the conceptual basis for a disaster resilience index. This
56 underlying framework is deployed to link “proxies for resilience” that can be measured and are
57 collected together in categories derived from the literature (Cutter et al. 2010, p6). Alternative
58 conceptual framings have responded to widening research on the factors at play in determining
59 resilience, taking into account, for example, material, relational, and subjective dimensions (Becker et
60 al., 2019; Berkes and Ross, 2013; Kruse et al., 2019; Plummer, 2009), including culture, knowledge, and
61 power (Plummer 2009; Kruse et al 2019).

62

63 The choices embedded in these conceptual frameworks and proxy indicators inevitably shape what is
64 measured, reflecting underlying assumptions, generalisations and approximations, and making the
65 selection of a resilience framework a contentious issue (Jones and Tanner, 2016; Schipper and
66 Langston, 2015; Walsh-Dilley and Wolford, 2015). It also generates significant practical and ethical
67 drawbacks that are too easily overlooked. When on-the-ground efforts to ‘build’ or ‘support’
68 resilience are predicated on frameworks and attend to indicators, changes in proxy variables are
69 taken to be changes in resilience (Béné, 2013). A resilience intervention is judged a success when there
70 is a change in chosen indicators, reflecting a predetermined commitment to, for example, livelihood
71 diversification or expanded social networks as positive outcomes. However wide the net is cast over
72 potential indicators, the difficulty lies in asking: ‘did the indicators change?’ rather than: ‘did
73 experiences of resilience change?’ Underlying this practical problem is a more challenging terrain of
74 knowledge politics. Whose interests and values are being embedded into resilience interventions
75 through the choice of frameworks and indicators? As Walsh-Dilley and Wolford (2015) note,
76 rendering resilience legible to development practitioners, policy makers and planners allows it to be
77 operationalised and measured through precise definition and a clear statement of indicators. While
78 this aligns with a trend towards toolkits and standardisation across the development industry (Jones

79 2019), it inevitably privileges dominant voices and “closes our eyes to the multiplicity, contingency
80 and context of building resilient lives on the ground, necessarily elevating the interests and
81 knowledges of some over others” (Walsh-Dilley and Wolford, 2015 p.176). Measurement is, therefore,
82 imbued with questions of social justice even before it becomes a practical challenge for resilience
83 policy and interventions.

84

85 Within environmental justice, the pillars of recognition, distributive and participatory justice have
86 been applied to shed light on the uneven distribution of risks and benefits across diverse settings,
87 with recognition justice directing attention to the identities, values and interests that are accounted
88 for in decision making (Fraser, 2000; Schlosberg, 2004; Walker and Day, 2012). Misrecognition
89 devalues individuals or groups in social or institutional processes, leading to cultural domination,
90 invisibility, or public stereotyping (Fraser 1997). In what has traditionally been a separate field,
91 political ecology has leveraged discourse, power and structural relations to produce numerous
92 studies that demonstrate the degree of difference between dominant outsider, expert narratives and
93 the lived experience of poor people in multiple contexts (Leach and Mearns, 1996; Adger et al. 2001;
94 Johnson et al. 2015). More recently, the growing field of critical environmental justice has sought to
95 exploit synergies between political ecology and environmental justice, with recognition at the centre
96 (Massarella et al. 2020; Svarstad and Benjaminsen 2020; Pellow 2016). In this critical turn, the
97 dominance of forms of knowledge is problematised, and how issues and concepts come to be defined,
98 delimited and interpreted is questioned. This expands recognition into analysis of the marginalisation
99 that occurs through meaning-making processes, in which the significance of voice depends on “the
100 hearer’s capacity and willingness to understand and respond to the validity of the claims raised”
101 (Temper, 2018 p6). Questions of epistemic justice - whether or not a social group’s experience,
102 understanding and valuation of their context is appreciated as legitimate knowledge – have thus been
103 drawn to the centre of recognition (Fricker 2007; McConkey 2004; Massarella et al. 2020; Svarstad and

104 Benjaminsen 2020), including in recent studies of resilience (Grove et al. 2020; Marin 2018; Chu and
105 Michael 2019).

106

107 Identifying and measuring resilience is thus part of a wider, contentious history of how – and whose
108 – knowledge is reproduced through development practice (Icaza and Vázquez 2013; Mikulewicz,
109 2019). As such, addressing recognition can be part of a wider effort to decolonise knowledge
110 production (Svarstad and Benjaminsen, 2020). As Walsh-Dilley and Wolford (2015 p176) note, taking
111 the epistemic challenge of resilience seriously means exploring “what would happen if the ‘objects of
112 development’ were asked to define resilience and to explain what resilience might mean in their own
113 lives and locations”. Here, we suggest that steps can be taken towards recognition justice by
114 prioritising respondents’ own assessment of their ability to live with shocks and stressors
115 (Mikulewicz, 2019). Our interest is thus in subjective resilience, in the sense of allowing people’s
116 “cognitive and affective valuation of their own capacity to anticipate, buffer and adapt their
117 livelihoods to disturbance and change” (Jones and Tanner 2016, p232). Taking this approach moves
118 away from imposed measures of resilience, accepting instead that people have a legitimate
119 understanding of their own circumstances, experiences, capacities and capabilities, and enabling
120 measurement to incorporate perceptions of social norms, risks, and opportunities and constraints on
121 action (Tebboth et al., 2019). While we share an interest in focusing on subjective resilience with
122 recent authors (Jones and Tanner 2016; see also Nguyen and James, 2013; Tebboth et al. 2019), we
123 depart from current literature in that, rather than relying on an underlying resilience framework to
124 select the focus of survey questions, we invite participants to consider multiple shock and stressor
125 storylines and assess their ability to cope and/ or recover in relation to each. This enables an
126 empirically-grounded understanding of resilience itself to become the object of inquiry in a
127 subsequent step that explores meanings and underlying drivers of resilience through qualitative
128 exploration. This allows participants to narrate and analyse their own experiences of living with

129 socio-ecological shocks and stressors, rather than potentially distorting them through the lens of a
130 particular framework (Walsh-Dilley and Wolford, 2015; Svarstad and Benjaminsen 2020).

131

132 While avoiding the use of frameworks to derive indicators out of context, we still need to locate our
133 study of resilience within a diversity of different literatures (Brown, 2014). Following a broader trend
134 in the social sciences, we ground our approach in social-ecological systems (SES) (Carpenter et al.,
135 2001; Walker et al., 2006), recognising the fit between SES and questions of development, climate
136 change adaptation and disaster risk management (Tanner et al., 2015). In this view, resilience is
137 understood as the magnitude of disturbance that can be applied before a system is unable to recover
138 its earlier pattern of behaviour. When a social-ecological system has low resilience, even a small event
139 can undermine its persistence (Folke, 2003; Walker et al., 2004). Change, when it does occur, is
140 typically nonlinear, and comes about when thresholds are crossed, leading to a transformation in the
141 system (Folke et al., 2010). Focusing on the ‘social’, many authors draw attention to the significance of
142 individual agency and collective action in resilience (e.g. Adger, 2003; Brown, 2014; Brown and
143 Westaway, 2011; Maclean et al., 2016). The capacity for human interventions to alter resilience
144 motivates the search for actions that shift thresholds, the crossing of which might undermine “the
145 goods and services that support our quality of life” (Walker et al., 2006), p37). Recognition of this
146 central role for thresholds in SES underpins our study, and provides us with an analytical starting
147 point for resilience assessment that is independent of hypothesised underlying factors.

148

149 In the following, we propose a novel method for measuring householders’ perception of their
150 distance to thresholds found within their SES. Our motivation is two-fold. First, we anticipate that
151 taking this approach will allow those concerned with policy or practice interventions to undertake an
152 assessment of whether actions taken to address the components or indicators of resilience identified
153 in the literature had effected a change in (subjective) resilience. Second, and the focus of the example
154 in this paper, is to enable inductive, contextualised and situated exploration of determinants of

155 resilience through subsequent qualitative methods focused on the factors that differentiate those who
156 perceive themselves to have relatively high resilience, from those reporting relatively low resilience.
157 Importantly, our interest is not in quantifying resilience as such, but in enabling relative resilience to
158 be measured in a given cohort of respondents; that is, to produce an index that enables resilience
159 ranking. We view this to be particularly important given the increasing critical attention on the
160 potential for resilience to advance inequitable development, overlooking the multi-scale, deep-rooted
161 and historically informed social, cultural and political factors that inequitably distribute risks and
162 benefits between system actors (Carr, 2019; Cote and Nightingale, 2012; Fainstein, 2015; Hayward,
163 2013; MacKinnon and Derickson, 2013; Matin et al., 2018), and the associated “multiplicity,
164 contingency and context of building resilient lives on the ground” (Walsh-Dilley and Wolford, 2015
165 p,176). Social, cultural, and power relations shape how local risks are understood, prioritised, and
166 managed (Granderson, 2014; Jones and Boyd, 2011; Nagoda and Nightingale, 2017; Yates, 2012) while
167 networks of organisations, institutions and narratives, politics, and power shape access to and control
168 over resources and frame decision making (Artur and Hilhorst, 2012; Borie et al., 2019; Carr, 2019;
169 Ensor et al., 2015; Walsh-Dilley et al., 2016). A situated understanding of how and why resilience is
170 differentiated within a given population can direct policy attention and practical actions towards
171 these root causes, driving towards equitable resilience (Matin et al. 2018). As such, our work
172 contributes to middle range theorising of resilience (Matin et al. 2018): the integration of recognition
173 into assessment embeds epistemic diversity into resilience, enabling it to reflect forms and causes of
174 difference. This in turn makes our contribution methodological as well as analytical, but not at the
175 level of a large scale unifying “grand theory” (Betz, 2016). Rather, by moving beyond context specific
176 observation and towards an approach that is repeatable, transferable and testable, our attention to the
177 middle range is better able to serve the interests of development and disaster risk research, policy and
178 practice stakeholders, who engage with the world through the lens of particular problems in
179 particular contexts (Kang 2014).

180

181 In the next section, we introduce the method for resilience ranking, comprising a household survey
182 and quantitative analysis. To demonstrate the veracity of our approach, we present results from
183 fieldwork undertaken in Bangladesh from July to November 2017 during which the survey was
184 administered to 572 households across six localities (*paras*) in three villages sites. The survey was
185 followed up by participatory qualitative investigation that explores the context and histories of
186 households in depth. Together, these quantitative and qualitative data demonstrate the efficacy of our
187 approach, revealing how environmental and socio-economic causal factors interact to distribute
188 resilience unevenly within and between communities and, thus, the significance of predicating
189 resilience assessment on a situated study capable of addressing the epistemic challenge of recognition
190 justice.

191

192 **2.0 Methods**

193 In this section we set out a novel method for resilience ranking of households based on a survey
194 questionnaire. In our fieldwork, the survey was followed by qualitative inquiry to investigate the
195 factors differentiating those with self-reported lower and higher resilience, as set out in section 2.2
196 below. A summary of the case study locations is provided in section 2.3.

197

198 2.1 Resilience Ranking

199 The resilience ranking method builds on Walker et al.'s social-ecological understanding of resilience,
200 and looks to measure the distance to a threshold beyond which recovery is impossible. The method
201 relies on developing different hypothetical storylines that describe disturbances that respondents
202 would be familiar with, covering natural hazard impacts (in our case, flooding, erosion, drought), and
203 development issues (reduction of development aid, and fluctuations in the markets). A respondent is
204 understood to be resilient if they are able to recover from the disturbance; their resilience is overcome
205 if they cannot recover. The storylines are presented as scenarios, each scenario representing a
206 different level of perturbation. For our fieldwork, the storylines and scenarios were developed based

207 on the second and third authors' expert knowledge of the context, and the relevance, significance and
208 scaling of the disturbances were verified in discussion with local research assistants with knowledge
209 of each village context (Table 1).

210

211 For each scenario, a household representative is asked to assess *how likely it is that the scenario would*
212 *produce a setback that their household would find it very difficult to recover from.* As Table 1 sets out for the
213 case study locations in Bangladesh, this self-assessment is undertaken for each storyline in relation to
214 a: a) relatively small disturbance; b) moderate disturbance; and c) more significant disturbance. Each
215 storyline is thus explored in three scenarios, in which the magnitude of the disturbance increases in
216 parts *a, b, and c*, making a total of 15 questions to each household. The questions invite the participant
217 to express the conditions under which they 'cross a threshold' from being able to cope and recover, to
218 being unable to cope. This provides an empirical subjective approach to Walker et al.'s (2006)
219 understanding of social-ecological resilience, as an expression of moving from coping to not coping
220 suggests moving into a regime that is highly undesirable from a human perspective. As a subjective
221 judgement, this may comprise, for example, the participant's assessment of the effects of changes in
222 ecosystem services, economics and/or social conditions. Note that, while the analytical focus on
223 thresholds incorporates the ability to resist variability or change (that is, to not experience some
224 changes as a shock or stressor; Béné and Doyen, 2018), the use of scenarios invites respondents to
225 consider being hit by a shock and recovering as a phenomenological event. As such, it is a limitation
226 of a subjective approach that it cannot fully account for all aspects of resistance. Each scenario has
227 been selected to have relevance and familiarity to those living in the case study locations. The method
228 thus relies on the respondent's understanding of combined social, environmental and/or economic
229 effects of each scenario, their capacity and willingness to adjust or adapt, and the impact of this on
230 their household.

231

Disturbance storyline	Scenario a: Small disturbance	Scenario b: Moderate disturbance	Scenario c: Significant disturbance
1) Flooding	The village has temporarily lost 10% of its lowest-lying agricultural land to a flood.	The village has lost 25% of its lowest-lying agricultural land and some buildings are flooded.	The village has lost 50% of its lowest-lying agricultural land and some buildings and houses are flooded.
2) Erosion/landslide	The village has permanently lost 5% of its arable land either to erosion or to a landslide (as appropriate).	The village has permanently lost 10% of its arable land either to erosion or to a landslide and some buildings have also been lost.	The village has permanently lost 25% of its agricultural land, buildings have been lost, and houses have been affected by the landslide/erosion.
3) Drought	The village is suffering a month-long drought which reduces its total water supply by 10%.	The village is suffering a month-long drought which reduces its water supply by 25%.	The village is suffering a month-long drought which reduces its water supply by 50%.
4) Reduction of development aid (via NGOs/CBOs)	The availability of credit has reduced by 25%.	The availability of credit has reduced by 50%.	The availability of credit has reduced by 75%.

5) Fluctuation in the market (with respect to cash crops)	The price has dropped by 10%.	The price has dropped by 20%.	The price has dropped by 30%.
------------------------------------------------------------------	-------------------------------	-------------------------------	-------------------------------

Table 1: the five disturbance scenarios used in the case study locations

232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253

Responses are recorded on a Likert-type scale from 1 to 6, such that a response of 1-3 implies a judgement by the respondent that they will not cross a threshold (1 – certain to recover, 2 - very likely, 3 – likely to recover) and 4-6 that they will not recover (4 - likely to not recover, 5 - very likely, 6 - certain to not recover). Note that the scale is assumed to be symmetrical with an implied equal ‘gap’ between each point on the scale. Resilience is interpreted in terms of the ‘distance to a threshold’; in this case, the minimum magnitude of the disturbance x that the respondent judges themselves unable to recover from. Thus, those judging themselves certain to recover are further from a threshold than those judging themselves to be very likely (or likely) to recover.

To capture differences in perceived resilience that account for potential disturbance across the five storylines, each household is assigned a resilience score. This score reflects their subjective assessment of each storyline scenario and allows households to be ranked, capturing differences in perceived resilience. To produce a resilience ranking score (or index) for each household requires accounting for two degrees of freedom: the selected point on the scale for a given storyline, and the number of times each point on the scale is selected for a given household. A resilience ranking score can thus be defined by a simple sum-of-products. Thus, if there are n_{\max} storylines, and each storyline is framed as a question (Q_n) with three parts (a, b, c) where the severity or scale of the disturbance or shock increased, such that it is greater in b than a, and greater in c than in b, then $Q_n(i,h)$ represents question storyline n with disturbance i directed to household h . If x is the household response to question n disturbance i , the ranking score is provided by:

254

255 Resilience score for household $h = \sum_{x=1}^6 (\text{count}(Q_n(i,h)=x), 6 \geq x \geq 1, i=a,b,c; n=1 \dots n_{\max})$

256

257 Those households that are *most* resilient will only register high scores for disturbance c (the largest

258 disturbance), and thus their overall score will remain relatively low (scoring '1' for a and b , with

259 differences determined by the disturbance c scores). Those at the other extreme, who are *least* resilient

260 will score 6's for disturbance b and c (i.e. certain to not recover from the moderate and most

261 significant disturbances). Thus these households will have the highest overall scores, differentiated by

262 the disturbance a (small disturbance) scores. In reality, households will most likely fall in the

263 continuum between these two extremes. Ranking of households, from least to most resilient, is

264 provided by their position in this continuum (highest scoring households judging themselves to be

265 least resilient).

266

267 This ranking is *not* intended to be a quantification of resilience. It is important to recognise that the

268 assessment is (a) subjectively produced, (b) responds to a limited number of scenarios and (c) is based

269 on thresholds identified through the interpretation by each respondent of 'not able to recover' in

270 relation to each scenario. The potential for bias is recognised due to self-interest (e.g. in attracting

271 development investment) or, conversely, due to a desire to be seen to be able to cope. Translation into

272 local languages is essential. Careful design of questions in consultation with local expertise that

273 explicitly avoids reference to imported terms such as resilience, and responds to locally relevant

274 conditions, is used to minimise risks, but these cannot be entirely removed. However, while difficult

275 to eliminate completely, the 'hypothetical bias' that can plague self-reported scoring are minimised as

276 cultural factors are largely shared between groups of respondents (Jones and Tanner 2016; Ehmke et

277 al. 2008). Given the cultural similarity of respondents, there is no reason to believe that hypothetical

278 bias will lead to any systematic bias impacting our ability to distinguish the factors that differentiate

279 those with relatively high and low resilience. The overall aim is an index of resilience, negating the

280 need to calibrate between storylines and allowing the rapid identification of relatively low and high
281 resilience households, in relation to the scenarios presented. At this stage, analysis of these structured
282 subjective outputs provides insights into the data, but does not yet describe the real world. Ranking
283 sets the stage for more detailed qualitative work to understand differentiation between experiences,
284 and to expose and resolve, in discussion with respondents, any potential bias effects.

285

286 2.2 Qualitative methods

287 Participatory qualitative methods were deployed in the second stage of fieldwork to ensure
288 respondents were supported to narrate their own experiences of resilience. These methods were
289 deployed by local research assistants with experience of facilitation, knowledge of each village context
290 and with local language skills. We note that this stage could be supported through a growing toolbox
291 of creative and participatory methods that are designed to “reach across difference” (Brooks et al., 2019
292 p2) and contribute towards participants’ ownership of the knowledge creation process (Brooks et al.,
293 2019; Fals-Borda, 1987; Amaya and Yeates, 2015). In the case presented below, method selection was
294 informed by research assistant skills and experiences and intended to open discussion on social-
295 ecological relations from multiple perspectives. To that end, interpretation of the results was supported
296 by 26 focus group discussions in which facilitators worked with participants to explore and map
297 different aspects of their social-ecological system: ecosystem services, physical infrastructure,
298 organisations, and formal and informal institutions. Within each village, two male and two female
299 groups were selected: one comprised of those identified as having high resilience in the ranking survey,
300 and the other as having identified as low resilience. A comparative analysis of the focus group
301 transcripts and maps revealed similarities and differences in perceptions, explored the choices
302 available, and located the significant factors at play in determining livelihood and disaster risk
303 outcomes. These insights were used to inform themes and prompts for in-depth interviews. 17
304 respondents were selected for two of the locations, and 16 for the third (that is, a total of 33 interviews).
305 These respondents were selected to ensure representation from across the groups: male and female,

306 and high and low resilience. The in-depth interviews opened space to further understand the different
307 influential actors, drivers and relational links between different components identified in the system
308 map.

309

310 2.3 Case study

311 This paper draws on fieldwork from three village sites carried out by a research team from July 2017 to
312 November 2017. Each site comprises two or more *paras* (localities), and lies in a distinct agro-ecological
313 region with very different religious, caste and ethnic profiles. As the descriptions below illustrate, each
314 is marginalised compared to mainstream Bangladeshi society. The following overview descriptions of
315 the village sites draws on insights gathered through the qualitative methods outlined above. The village
316 and locality names have been replaced with codes to protect the anonymity of the respondents.

317

318 2.3.1 KN1

319 The first village site, KN1, lies in the north-western region of Bangladesh in the district of Dinajpur.
320 Two localities, or *paras*, were chosen from this site: Har Para and Bari. The region is characterised by
321 long periods of droughts usually lasting up to seven months. However, the region also suffers from
322 floods, especially during the monsoons, river erosion and severe cold spells during the winters. With
323 very little industrial development in the region, the majority of people are engaged in agriculture as
324 cultivators or agricultural labourers. The population is predominantly Hindu (c75%) with the
325 remainder Muslim (who identify as Bengalis) or Christian. The vulnerable and marginalised
326 communities in this region include the Musahars. The Musahars identify themselves as tribal/
327 indigenous, but they are yet to officially be granted that status. The Musahars are a Dalit community
328 and one of the most deprived and marginalised in Bangladesh, and have limited access to schools, jobs
329 and do not own any land. The Hindus live in Bari and are Khastriya, Vaishya (upper castes) and Rishi
330 (lower caste) communities. The Khatriyas and a small number of the Vaishyas own both homestead
331 and farm land. However, the majority of the Vaishyas and the Rishis live on government *khaas* land.

332 They pay a yearly land tax in order to hold onto this land. Despite having proof of paying land taxes,
333 the Hindu community in particular in this location face constant threats of displacement from local
334 Muslims, and industrialists from outside the local area.

335

336 2.3.2 RM1

337 The second village site is also in north-western Bangladesh, bordering the Indian state of Assam. Two
338 communities live in this village site: Muslims (in Tan Para) and Hindu Namasudras (in Das *para*). The
339 village site is located along a national highway road that links Bangladesh and India. Villages in this
340 region experience cyclical poverty and hunger during the *monga* seasons - between September to
341 November, when *amman* paddy is sown, and March to April, immediately after *boro* rice is sown.
342 During this period the people are extremely vulnerable to external shocks, and many people migrate
343 for work. The government during this time provides *matti kata* (mud digging) work, usually carried out
344 by women. Those who cannot find work during the *monga* season rely on NGO loans to get by. The
345 region suffers from an average of three devastating floods annually - during *kaal baisakhi* (north-
346 westerly winds), monsoons and the retreating monsoons. In the Muslim *para* (Tan), all families are
347 engaged in agriculture either as own land owners, tenant farmers or agricultural labourers. There are
348 almost no female agricultural labourers, as both the Muslim and the Namasudra community feel that
349 it is not appropriate for women and would affect the family's honour. In the Namasudra *para*, no-one
350 owns agricultural land as all members are *majhis* (fishermen). They get most of their fish from the *beels*
351 or *pukurs* (ponds), but not from the river as there are hardly any fish left. The Namasudras, while able
352 to maintain good relations with the Muslims in the local area, live in fear that they can be displaced
353 from their land, as they are a minority in this area.

354

355 2.3.3 KK1

356 KK1 is located in the district of Barisal in South Central Bangladesh, surrounded by the Sundarbans.

357 The village site has people from three different communities: Muslims, Rakhines (Buddhists) and

358 Namasudras. Four *paras* were selected from this village: Chand Para, Khola Para, Mapur and Manpur.
359 Chand and Khola Para are occupied by Rakhines, Mapur by Muslims, and Manpur have both
360 Namasudras and Muslims. The region experiences floods three to four times a year, followed by strong
361 cyclones, which are gradually eroding the coast. The Muslims all belong to the fishing community and
362 live on government *khaas* land. The men usually work on boats owned local businessmen. The
363 Namasudras live in the most remote part of the village site. Due to the proximity to the river, the *para*
364 suffers from small floods with the seasonal high tides. Some from the Rakhine community live on their
365 own land, while the majority are landless. A majority of the landowners do not cultivate their own
366 land; rather, they lease it to the Bengali Muslims in the region. The community, which is reducing in
367 size, is under threat of displacement, in the aftermath of the Rohingya crisis and due to powerful
368 (Muslim) property owners usurping their agricultural lands. The Rakhines have faced numerous
369 threats and are now fearful of their lives, which has placed restrictions on their movement.

370

371 **3.0 Results: revealing patterns of resilience**

372 In this section we present the quantitative results of the resilience ranking survey accompanied by a
373 qualitative explanation the results. We adopt different lenses – comparing the localities, comparing
374 those reporting high and low resilience in Har Para and Manpur, and comparing RM1 and KN1
375 village sites – to illustrate the variation in resilience within and between communities that can be
376 revealed by the ranking method. In so doing, we are able (a) to confirm that the ranking method is
377 offering insights consistent with the lived experience of communities; and (b) undertake analyses that
378 build from community understandings to of resilience within and between communities.

379

380 **3.1 Variation between localities and village sites**

381 Table 2 and Figure 1 report the average (mean) sum of products resilience ranking score for each
382 locality in the study. The resilience ranking score is intended to enable differentiation between
383 households with low and high resilience in relation to the five storylines of environmental and

384 economic change. Calculating the average resilience ranking scores for each locality allows the
 385 variation in responses between localities to be assessed, identifying those places where respondents,
 386 on average, judge themselves to be more or less resilient. Note that a higher score indicates lower
 387 resilience.

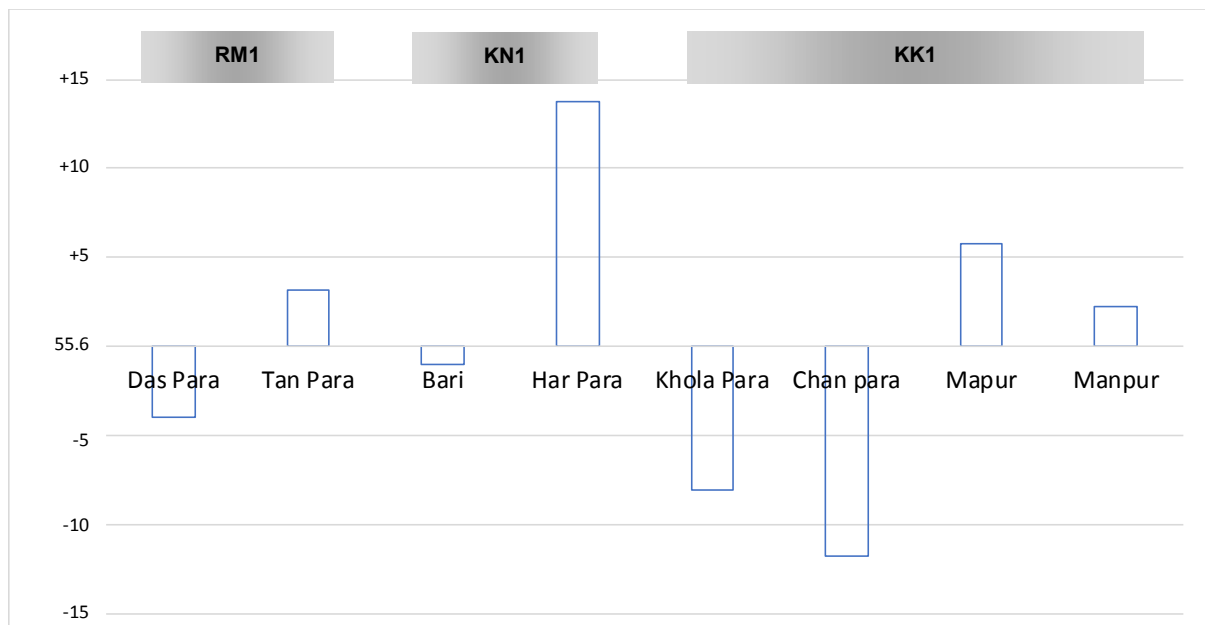
388

389 Table 2: mean resilience ranking scores by locality

Locality (number of respondents, n=569)	Village site	Mean resilience ranking score	Standard deviation	<i>Deviation from overall mean</i>
Das Para (100)	RM1	51.6	6.7	-4.0
Tan Para (109)		58.7	10.5	3.1
Bari (77)	KN1	54.6	12.1	-1.0
Har Para (73)		69.3	10.4	13.7
Khola Para (44)	KK1	47.5	5.5	-8.1
Chan Para (31)		43.8	8.6	-11.8
Mapur (63)		61.3	6.6	5.7
Manpur (72)		57.8	6.1	2.2
<i>Overall mean ranking score</i>		55.6		

390

391 Figure 1: locality mean resilience ranking scores (higher score indicates lower resilience; shown as
 392 deviation from full sample mean)



393

394

395 Figure 1 identifies that respondents in Har Para judged themselves, on average, to be the least
 396 resilient compared to the other locations. The Musahars in Har Para, KN1 originate from the district
 397 of Chappra in Bihar, India, brought along with others to this region during the period of the British
 398 Raj to clear forests and lay railway lines. As in India, the Musahars (which translates as ‘those who eat
 399 rats’) are marginalised and continue to face social stigmatisation based on their identity and their
 400 eating habits. In an attempt to improve their social status, many have converted to Christianity, but
 401 this in turn has meant forgoing many of their food habits which would otherwise have been sufficient
 402 to feed them during periods of shortage. KN1 lies in a region characterised by long periods of
 403 drought, usually lasting up to seven months, regular floods (especially during the monsoons), river
 404 erosion, and severe cold spells during the winters. The village site falls is in the dry and arid zone,
 405 with summer temperatures reaching 45C and winter temperatures dropping to 5C. The Musahar
 406 community have no recognised rights to land and face the constant threat of displacement, usually
 407 due to government road expansion works. Education levels are low, with both men and women
 408 working at a very young age. The lack of and poor quality of education restricts access to higher

409 paying jobs in the neighbouring Economic Processing Zone. As a consequence, the Musahars usually
410 find themselves confined to low paying unskilled jobs, with families often dependent on female
411 agricultural labour for their survival - yet pay is poor, the growing seasons are short, and severe
412 drought or flood events restrict the opportunities for paid work. Unless absolutely necessary, the
413 Musahars refrain from working in the brick kilns that are common in the region, reporting ill-
414 treatment and a failure to pay on time that leads to growing indebtedness and, for some, bonded
415 labour. Musahars rely almost completely on the market for their basic food staples and are very
416 sensitive to price fluctuations which common following droughts. They receive food grains from the
417 Government of Bangladesh, under their targeted Public Food Distribution System. (PFDS), but report
418 irregularity in food dispersal and access. This further adds to problems of food security and nutrition.
419 Overall, the Musahars suffer from economic and food insecurity as a result of environmental shocks
420 and stresses, a shortage of well-paying jobs, and the overarching effects of social discrimination.

421

422 Mapur residents reported, on average, the second least resilient scores. The Muslims here occupy *khaas*
423 land and face the threat of displacement, either due to road construction, or from flooding. The men,
424 working on boats owned by businessmen, report that with declining numbers of fish, they are forced
425 to go out to the deep seas where the risk is greater. If they stray into the coast of India they are liable to
426 arrest by the Indian Coast Guards, resulting in several months in jail. Their lives are also at risk from
427 *dacoits* (armed robbers) that live near the Sundarbans. Many families spoke of how they have lost one
428 or two family members because of this occupation. Among these Muslims there are some who, with
429 the help of NGOs, have tried to branch out and diversify their occupations. However, even this
430 diversification largely remains tied to the fishing industry in the region. Women receive work only two
431 months in a year, to break shrimp heads in the processing factories. Within the same village site, the
432 households in Manpur, who report slightly greater resilience than in Mapur, are differentiated from
433 their neighbours in Mapur in a number of important ways. The residents here are a mix of Namasudras
434 and Muslims. One half (often considered the wealthier group) live within the road embankment and

435 the other half live outside of it. Families outside lack the protection of the embankment and, moreover,
436 do not own land of their own but live on *khaas* land. These are communities that have suffered past
437 experiences of displacement. People here are engaged in a wider range of livelihood activities than in
438 Mapur, including fishing, agricultural work, driving auto rickshaws, and working in the brick kilns
439 surrounding the region. Families (both Muslim and Hindu) who live within the embankment are more
440 secure, owning both their homestead and agricultural land. These factors underpin the slightly higher
441 resilience reported by households in Manpur compared to their near neighbours Mapur.

442

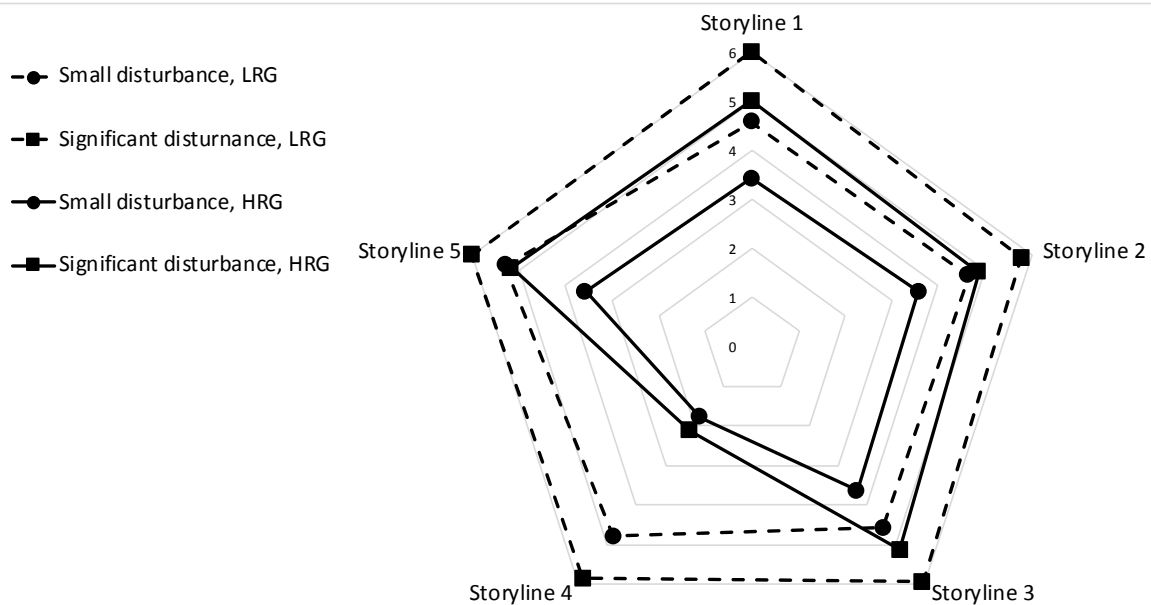
443 Those who reside in Kholā and Chan para reported the highest average resilience in comparison to
444 the other localities. Here, the Buddhist Rakhine community live on ancestral land, and do not suffer
445 from regular floods, unlike the neighbouring paras (Mapur and Manpur). However, water shortages,
446 due to increased salinity of the water tables, is an ongoing challenge. Politically, the Rakhine are
447 facing a backlash from the Muslims of the region following the Rohingya refugee crisis. In addition to
448 this, they report a constant threat from state forces. For example, at the time of survey, one of our
449 respondents informed us that her sister's house was raided by the crime and terrorist squad of
450 Bangladesh - the Rapid Action Battalion (RAB). In common with many similar stories reported
451 during the fieldwork in these localities, the raid was focused on the illegal sale of alcohol. While the
452 government of Bangladesh allows the Rakhines and other indigenous communities to brew their own
453 local alcohol, this cannot be sold in the markets. The respondent informed us that her sister was
454 levied a huge fine for storing up to 100 litres of alcohol – an unlikely claim as it cannot be made in
455 such quantities. Similar stories of raids and fines are very common. The difficulties being faced by the
456 Rakhine are forcing many to return to Myanmar, yet as a community they have significant
457 advantages compared to the other study sites, arising from their secure access to land and relative
458 isolation from environmental shocks.

459

460 **3.2 Higher and lower resilience groups in Har Para**

461 Figure 2 takes a closer look at Har Para, focusing on two groups: those reporting the lowest and
 462 highest resilience (defined as those in the upper and lower quintiles of a ranked list of household
 463 resilience scores, referred to as the low resilience group, or LRG, and high resilience group, or HRG,
 464 respectively). Figure 2 shows the mean scale-point scores for those households in the LRG and HRG,
 465 in relation to the smallest and largest disturbance for each storyline (see Table 1 for the storylines).

467 Figure 2: Mean response scores, high resilience group (HRG, solid line) and low resilience group
 468 (LRG, broken line), Har Para



469
 470
 471 Figure 2 suggests that LRG are broadly equally sensitive to all scenarios, for both small and
 472 significant disturbances. In Har Para, members of LRG do not own land, have temporary housing
 473 structures and rely predominantly on agricultural labour for their survival. Members of the HRG
 474 reported that they have access to alternative occupations (including auto rickshaw drivers, casual day
 475 labourers in loading stations, livestock rearing) and want to move away from dependence on
 476 microfinance loans. With households engaged in different kinds of occupations, they don't suffer the
 477 same seasonal economic losses as the LRG, who are more closely tied to the agricultural cycles for

478 their survival. Most significantly, this enables members of the HRG to dissociate themselves from
479 NGO loans, underpinning a greater coping capacity across the range of storylines that were
480 discussed. For example, Ritam a 34 year old Musahar, drives a *borac* (an electric auto rickshaw) to
481 ferry passengers and goods, and occasionally works as a daily wage labourer in a rice mill. This was
482 made possible by taking loans from the church (where he is a member), an NGO, relatives and using
483 the savings of his wife (an agricultural labourer). The *borac* has helped diversify the sources of
484 household income and has allowed the family to accumulate savings. Using this capital he has set up
485 the only tea and snacks stall in the locality, which is now looked after by his wife, who now only
486 undertakes agricultural work when there is an immediate need for money. As a consequence Ritam
487 and his wife use the NGO scheme merely as a place where they can save their money, rather than a
488 place they need for accessing credit. This approach to household income diversification provides a
489 way out of micro-credit dependence for some, but is impossible for the majority in Har Para who
490 remain confined to low skilled and hence low paying jobs.

491
492 Discussions and interviews with LRG members revealed two main socio-economic dynamics drive
493 the sensitivity of this group to NGO loans. First, many of the landless and poor are involved in a
494 contract livestock system called '*adi goru*'. Under this system, the larger land owners or wealthy
495 households buy cattle, and the landless and poorest households rear the cattle at their own cost.
496 When sold, the income is divided equally between the two. If this cow has a calf, the first calf is given
497 to the landowner. The second calf is kept by the household, and any profits from this calf are kept by
498 the household. Many families rely on the money that they would obtain from the sale of cattle to
499 repair houses, buy food and pay for marriages. However, drought frequently results in loss of cattle,
500 which drives people into further debt.

501
502 The second dynamic common among those in the LRG is participation in *bandoki*. The system of *bandoki*
503 refers to a land mortgage system. Landowners (small and large) use this system to procure instant loans

504 from those in the village who have access to different sources of credit. The land is given to the villager,
505 who retains access until the principal amount is repaid in full. Usually NGOs provide access to these
506 large sums of money, with loans provided to villagers who claim that the money will be used for
507 entrepreneurial activities. While some LRG Musahars are involved in *bandoki*, those who are extremely
508 poor do not have access to loans and are excluded from the system. The Musahars who are involved
509 see gaining *bandoki* land as a way to earn money, but also a process by which they are closer to the land,
510 providing a mechanism to ensure their food security. Villages who are *bandoki* cultivators have freedom
511 in terms of what and how to produce. However, they are not free from the pressures that are placed
512 upon them by the market. This results in them cultivating high yielding variety seeds with high input
513 costs. They are dependent on large agricultural corporations for their seeds, fertilisers and pesticides.
514 None of these *bandoki* cultivators are registered as farmers and, as a consequence, do not access to cheap
515 agricultural loans and basic compensation for loss of crops, or subsidised access to mills. During
516 periods of excessive floods or drought, these *bandoki* farmers are excluded from any relief or aid
517 provided by the government, as they do not own the lands they cultivate. Left completely to the
518 vagaries of the market and environment shocks, LRG *bandoki* cultivators take multiple loans from
519 NGOs and other informal sources of credit trapping them in a system of production characterized by
520 increasing indebtedness. For minority communities like the Musahars, these pressures are exacerbated
521 by their social position, where discrimination often excludes them from well-paying jobs, sources of
522 credit and, at times, government payments.

523

524 The relative insensitivity of the HRG to micro-credit changes (storyline 4) demonstrates the
525 significance of this stressor in differentiating resilience in the *para*. A typical HRG respondent stated:
526 *“NGOs come and go and we cannot be dependent on such institutions that do not ensure continuity, where our*
527 *money is not safe in the long term. We have to look for other avenues of making and saving money.”*

528 Respondents were acutely aware that micro-credit came with the promise of financial independence,
529 and for many NGO loans are an important source of credit to secure basic food security needs; a

530 common response was to note that “we could at least repay loans with our labour”. Yet in Har Para, as in
531 other localities, people have witnessed a growing dependence on older or traditional forms of
532 usurious credit such as private money lenders. These loans have much higher interest rates, further
533 increasing the indebtedness of those who have to rely on these lenders. In the LRG, respondents
534 report few micro-credit options and felt at the greatest risk of falling prey to traditional lenders
535 should NGO micro-credit become scarce.

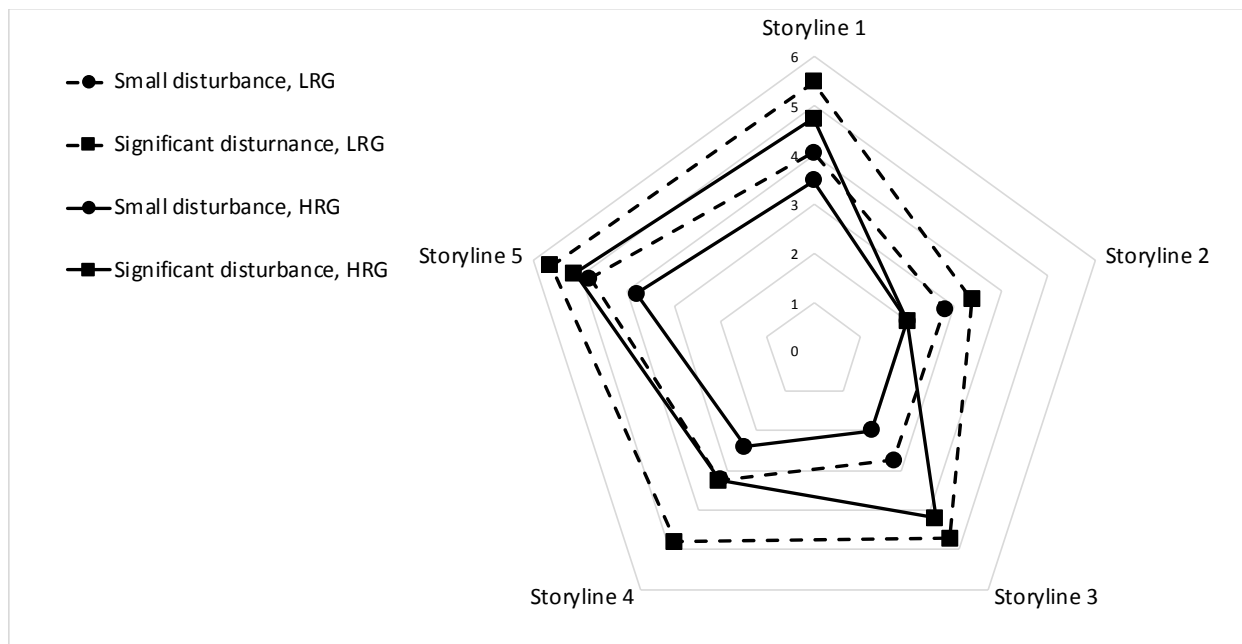
536

537 3.3 High and low resilience groups in Manpur

538 Figure 3 reflects a similar situation in Manpur to Har Para, in which the high and low resilience group
539 are differentiated by their dependence on NGO operated loans (storyline 4). However, the two village
540 localities are also different. In Manpur, storyline 2 (erosion/ landslide) also differentiates the low and
541 high resilience group: in this case, the most resilient perceive no change in their ability to cope when
542 the disturbance increases from small to significant. The least resilient, while relatively insensitive to
543 erosion and landslide, nonetheless report a deterioration in their ability to cope when the disturbance
544 increases. As noted above, this reflects an environment in which the better off in the community live
545 within the road embankment, proving security against the erosion suffered by the families living
546 outside the embankment (largely members of the LRG) who survive on more vulnerable *khaas* land.
547 Those living on the *khaas* land are forced to find unoccupied land to relocate to when their existing
548 land becomes untenable.

549

550 Figure 3: Mean response scores, high resilience group (HRG, solid line) and low resilience group
551 (LRG, broken line), Manpur



552

553

554

555 Storyline 3 (drought) is also significant, as a worsening drought leads to a substantial fall in the ability
 556 to cope and recover for both the low and high resilience groups. The short agricultural season is
 557 vulnerable to drought, which when of sufficient severity can induce massive crop losses, as well as
 558 the death of livestock. Livestock is an important source income for both low and high resilience
 559 households, with sales peaking during Eid, when drought is most likely. While this is driest period of
 560 the year, respondents also reported that severe droughts are due to water not being released from
 561 dams that lie across the border in India. As seen in figure 3, the HRG are particularly significantly
 562 affected. This reflects the experiences of predominantly medium- and large-scale farmers in the HRG
 563 who, along with paddy, cultivate jute which requires high quantities of water.

564

565 3.4 Variation between village sites

566 Figure 4 compares the RM1 and KN1 village sites, focusing on the perceived effects of the smallest
 567 and largest disturbances. This comparison reveals that the reported overall lower resilience of the
 568 KN1 village site (Figure 1) is principally a result of differences in relation to storylines 2 (erosion/

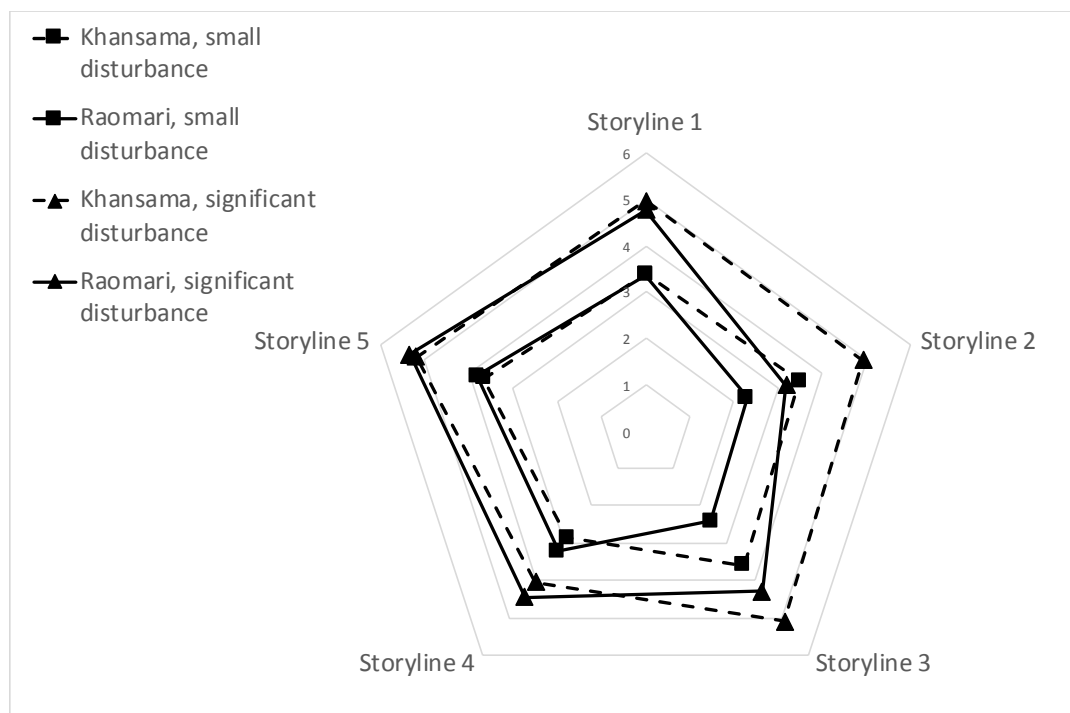
569 landslide) and 3 (drought), the investigation of which reveals important social and environmental
570 differences between the sites. Both sites experience flooding, but KN1 is prone to flash floods, while
571 RM1 experiences floods more frequently throughout the year. In KN1, the impact of flash floods is
572 felt in terms of landslides and river erosion (storyline 2) that take land and displace the people from
573 the villages. For the Musahars in KN1, these events occur against a backdrop of a lack of land rights
574 and very poor employment prospects. Importantly, the effect of increased flooding in RM1 is the
575 destruction of homes; however, they do not report significantly greater vulnerability to flooding as
576 they have well-established coping strategies (moving onto the national highway embankment while
577 waiting for the flood water to recede; or in the case of more permanent displacement, becoming *ghar*
578 *jamaais* - live-in son-in law). Within the Das community, a sizeable number of the young husbands live
579 as *ghar-jamaais* due to the floods. While resolving the immediate issue of homes lost to flooding, this
580 strategy remains problematic, as the family unit is broken up, suggesting that the resilience to
581 flooding that RM1 communities report masks a reliance on fundamentally undesirable coping
582 strategies.

583

584 Drought differentiates the communities in a similar manner to erosion, with both small and large
585 flood inducing a more profound impact in KN1 than in RM1. KN1 regularly suffers from long
586 periods of drought, leading to acute food shortages, lack of jobs and poor health. Access to water and
587 fisheries is undermined as prolonged drought dries up ponds and canals, while the situation in the
588 river is further aggravated by the construction of a bridge near the village, which has resulted in
589 siltation and reduced flow. As discussed above, the lower resilience in relation to drought reported in
590 KN1 is also influenced by the particularly precarious position of the Musahar community, who lack
591 access to food safety nets when prices rise following periods of drought and rely heavily on female
592 agricultural labour for cash income, opportunities for which reduce significantly following periods of
593 drought.

594

Figure 4: Mean scores for RM1 (solid line) and KN1 (broken line)



596

597

598

599

600 4.0 Discussion

601 While much literature continues to press the case for a focus on equity and social justice across the
 602 study of adaptation (See and Wilmsen 2020; Wilmsen and Rogers 2019; Adger et al. 2016), resilience
 603 (Mikulewicz 2019; Matin et al. 2018; Biermann et al. 2015) and transformation (Few et al., 2017; Jon,
 604 2018; Matyas & Pelling, 2015), these are well-worn calls and little has changed in practice (See and
 605 Wilmsen 2020; Svarstad and Benjaminsen 2020). Driving towards equity requires resilience planning
 606 that is grounded in the “richness of local experience”, focusing on how multiple underlying factors
 607 create patterns of disadvantage (Pelling and Garschagen, 2019 p328; Matin et al. 2018). It also requires
 608 methods capable of identifying these factors, in context. Resilience ranking enables this through
 609 subjective assessment that takes as a starting point local perceptions of interacting social and cultural
 610 norms, risks and opportunities, and offers rapid identification of high and low resilience groups,
 611 categorised in terms of their interpretation of the degree of disturbance they are able to recover from

612 (Walker et al. 2006). More detailed participatory qualitative work elicits expressions of how these
613 groups subjectively perceive, evaluate and narrate their situation, elevating local “senses of justice” in
614 a rich picture of how resilience is distributed (Svarstad and Benjaminsen 2020 p4). The least resilient
615 in Har Para, for example, describe a series of traps that arise from political and social marginalisation,
616 felt in terms of poor access to education, limited access to non-agricultural work, ill-treatment in
617 industry, and exclusion from government support. Each of these factors are felt as injustices that
618 differentiate them from their non-Musahar neighbours, and lock them into contract livestock and
619 land mortgage systems that promise a route to food security through access to land and animals, but
620 in fact intersect with market or weather events to drive them further into debt.

621
622 This inductive and situated exploration of resilience is particularly significant given the tendency for
623 policies and programmes framed by resilience to overlook the deep-rooted, historically-informed
624 social, cultural and political subjectivities and mechanisms that structure inequitable outcomes
625 between system actors (Chu and Michael, 2019; Matin et al. 2018; Fainstein, 2015; Cote and
626 Nightingale, 2012). While ontological challenges have hindered conceptual integration of the
627 biophysical and social within resilience (Carr, 2019; Olsson et al. 2015; Brand and Jax 2007), we
628 highlight here the centrality of recognition injustices in creating the conditions for the distribution of
629 outcomes in practice (Massarella et al. 2020; Svarstad and Benjaminsen 2020; See and Wilmsen 2020).
630 That is, it is the failure to give voice to different cultural and social groups and to prioritise *their*
631 meaning-making in accounting for the experiences, identities and values that they share that stands in
632 the way of practical progress towards equitable resilience.

633
634 Following Svarstad and Benjaminsen (2020), addressing recognition requires decolonising knowledge
635 in resilience research and practice by opening space for subjective assessment that allows affected
636 people to “analyse their own situation, independently of narratives produced by more powerful
637 actors” (p8). By moving away from the positivism of indicators and frameworks, the approach

638 presented here enables the engagement of households in the production of knowledge about their
639 resilience (Mikulewicz, 2019). Rather than inviting the “stereotyping and paternalism that are risks in
640 attempting to recognize marginalised groups” (Svarstad and Benjaminsen 2020 p8), resilience
641 planning and actions need to be predicated on assessments that allow the emergence of groups’ own,
642 locally grounded, assessment of difference and underlying conditions. As See and Wilmsen (2020)
643 reiterate through their analysis, households need to be understood “as heterogeneous entities that are
644 highly differentiated with different socio-economic starting points and relationships of power” (2020,
645 p10).

646

647 Avoiding misrecognition thus means adopting a form of resilience assessment capable of working
648 with participants to reveal these two core features of situated heterogeneity – the manner of
649 differentiation (the forms and features of difference) and causes of differentiation (underlying
650 conditions driving or sustaining difference). These insights are generalisable insofar as they push
651 back against attempts to synthesise resilience through comparison across contexts, and place a central
652 focus on a situated subjective approach. The two features are revealed through subjective ranking and
653 assessment, as the Bangladesh case illustrates. The first – the causes of differentiation – are varied,
654 encompassing social, political, economic and environmental factors. As Harrison and Chiroro (2016
655 p1) suggest, a focus on resilience should not be “at the expense of understanding the conditions that
656 shape vulnerability”, in particular through too much focus on biophysical shocks and too little on
657 underlying social conditions and drivers of risk (Cote and Nightingale 2012; see also Hayward, 2013;
658 MacKinnon and Derickson, 2013; Thomalla et al. 2018). In our case studies, exposure to drought and
659 flood events interact with, for example, access to livelihood opportunities; ownership, contract and
660 tenure systems; perceptions of identity and histories of discrimination and stigmatisation; and
661 planning and public policy arrangements. The effects are multi-causal, arising from interactions and
662 feedbacks such that they are highly context specific, shaping capabilities and sustaining patterns of
663 security and precarity. Policy or practice engagement in such contexts must necessarily be predicated

664 on a rich description capable of capturing experiences and understandings of causation, and
665 recognising that interventions occur in contexts already characterised by a complexity of social and
666 ecological relationships. These underlying conditions shape perceptions of risk and are experienced
667 as injustices; as patterns of winners and losers in existing practices of resilience; and as opportunities,
668 constraints and impacts that mediate external interventions (Dodman and Mitlin, 2011; Renn, 2011;
669 Walsh-Dilley et al., 2016).

670

671 The manner of differentiation – the second feature of heterogeneity that we highlight – focuses on the
672 forms of difference rather than the causes. In our cases, particularly evident were intra-community
673 heterogeneity; the significance of scale; vulnerability to specific versus generalised shocks; and
674 resilience that arises from desirable versus undesirable conditions and practices. In relation to intra-
675 community heterogeneity, the fact that shared social characteristics or living in a close proximity with
676 others does not produce a community of people with common vulnerabilities or capacities for
677 adaptation is well established (Dodman and Mitlin, 2011; Forsyth, 2013; Mohan and Stokke, 2000).

678 Here, we confirm this empirically in relation to resilience, a finding that is significant in the face of
679 tendencies towards homogenisation of communities that persists in some quarters (Svarstad and
680 Benjaminsen 2020). For example, while Musahar subjectivity binds the community to discriminatory
681 policies and practices, the experience of households across Har Para is not homogenous in social-
682 ecological resilience. Religion and caste can be too easily be deployed to identify bounded community
683 groups, concealing the factors that underpin (or undermine) the resilience of these groups, and the
684 significance of village scale differences that distribute resilience within them. Subjectivities, therefore,
685 while significant for equitable resilience, are not the end of the story. While we agree that attributes
686 such as caste, gender, religion or ethnicity can be “socially constructed to discriminate against
687 individuals and groups” and thereby “subject them to further disenfranchisement, undermine their
688 resilience, and create conditions for more risks to perpetuate” (Matin et al. 2018 p200), variation
689 within such groups remains. Moreover, it is the reasons for variation – in the Musahar case, capture

690 by or escape from loans and debts – that may be most significant in developing an understanding of
691 resilience that can ground effective, equitable support. Similarly, the cases present a clear picture of
692 variation within and between different scales of focus – household, locality and village – reinforcing
693 the significance of scale in differentiating resilience (Vogel et al. 2007; Matin et al. 2018) and, thus, of
694 an assessment methodology able to identify difference across scales.

695

696 More broadly, focus on the manner of differentiation draws attention to how experiences of resilience
697 vary significantly, and should guard against assumptions and simplifications in targeting policy or
698 practice. The precarious situation of the least resilient is particularly evident, who report close
699 proximity to thresholds following even the smallest environmental and/ or socio-economic
700 disturbances. As Pelling and Garschagen (2019) note, among the poorest, those least able to withstand
701 shocks and stressors have little to rely on, with homes and equipment that are fragile, and little by
702 way of livestock or savings to fall back on and that are rapidly depleted. Resilience actions, be they
703 conceived among policy or practice communities, need to identify and respond to the breadth of
704 threats experienced by these most vulnerable groups, and to do so by addressing the underlying
705 factors that give rise to these unsafe conditions. However, as those reporting the highest resilience in
706 Manpur illustrate, relatively resilient livelihoods can also be rapidly undermined, as in the case of
707 those running large-scale livestock enterprises who were found to be particularly vulnerable to
708 drought which, if of sufficient severity, might rapidly undermine this otherwise resilient occupation.
709 Moreover, the apparent resilience in RM1 is secured through an ability to temporarily migrate and
710 recover following repeated flood events or for families to be split through long term relocation. These
711 are challenging and undesirable practices, the persistence of which is not sought locally. Taken
712 together, the cases underline the need for space to be created within which resilience is defined in
713 relation to local understandings of precarity, and through the expression of senses of justice that
714 inform local conceptions of wellbeing. Without this, resilience risks becoming tied to the ability to
715 survive by living through cycles of recovery, limited to withstanding “knock after knock”

716 (MacKinnon and Derickson 2012 p255) and unable to secure outcomes that are valued in context
717 (Svarstad and Benjaminsen 2020; See and Wilmsen 2020).

718

719 **5.0 Conclusion**

720 Matin et al. (2018 p.197) summarise that “equity is concerned with how the moral equality of people
721 can be realised. It places focus on the needs of those disadvantaged by relations of power and
722 inequalities of opportunity, and how these barriers to human flourishing can be identified,
723 understood and addressed”. Seen through the lens of recognition justice, making progress towards
724 equitable resilience relies on securing a role for local communities in resilience assessment as a right,
725 not a privilege. This means moving beyond positivist approaches to resilience assessment and
726 histories of marginalising local voices. Rather, resilience assessment needs to be predicated on
727 methods that make resilience itself the object enquiry and place epistemic diversity at the centre.
728 Through this, two core features of situated heterogeneity – the manner of differentiation and causes
729 of differentiation – can be revealed and explained. As the results discussed here indicate, the
730 resilience ranking approach enables this, meeting the practical goal of integrating social, economic
731 and political root causes into resilience through attention to the epistemic challenge of recognition
732 justice. It is the failure to give voice to different cultural and social groups and to prioritise their
733 meaning-making that stands in the way of practical progress towards equitable resilience.

734

735 Resilience in practice – as deployed in the field by governmental and non-governmental agencies –
736 requires methods that are replicable and problem-focused. The ranking method is built around a
737 rapid and easy to implement household survey, the results of which can be readily analysed. This
738 allows identification of those who judge themselves to be of relatively high and low resilience, and in
739 so doing, provides an entry point for consideration of equity. Exploration of experiences and of the
740 similarities and differences between high and low resilience groups can be undertaken with
741 participants, using participatory qualitative methods. This second stage inevitably necessitates an

742 investment of time, requiring approaches that build trust and support open discussion, ideally
743 facilitated by those with experience of local languages, subtext and social norms.
744
745 The aim is to enable participants to control the narrative that emerges, elaborating their subjective
746 understanding and making sense of their own circumstances. As an endeavour in knowledge
747 production, there is a need for reflexive practice, with facilitators focusing on supporting participants
748 to elaborate their own positions, listening to them rather than speaking for them. Particular care may
749 be required to avoid reflecting or reinforcing dominant discourses of poverty and power that may be
750 prevalent in some settings. There is, however, an increasing menu of participatory and creative
751 approaches to select from, the choice of which should reflect the experience and skills of those
752 undertaking the resilience assessment. The results presented here suggest one such approach: focus
753 group discussions and group mapping exercises explore perceptions of risks, opportunities and the
754 underlying social, institutional and ecological conditions at play in determining livelihood and
755 disaster risk outcomes. Subsequent individual in-depth interviews then focus on themes informed by
756 these exercises, build on the trust developed during the group work, and provide an opportunity for
757 participants to reflect on initial insights. The result is a situated understanding of how and why
758 resilience is differentiated, offering an analytical starting point from which policy and practice can
759 drive towards equitable resilience.

760

761

762

763

764

765

766

767

- 768 Adger, W. N. (2001). Scales of governance and environmental justice for adaptation and mitigation of
769 climate change. *Journal of International Development*, 13(7), 921–931. <https://doi.org/10.1002/jid.833>
- 770 Adger, W.N., 2003. Social capital, collective action, and adaptation to climate change. *Economic*
771 *geography* 79, 387–404.
- 772 Adger, W. N., Quinn, T., Lorenzoni, I., & Murphy, C. (2016). Sharing the Pain: Perceptions of Fairness
773 Affect Private and Public Response to Hazards. *Annals of the American Association of Geographers*,
774 106(5), 1–18. <https://doi.org/10.1080/24694452.2016.1182005>
- 775 Amaya, A., & Yeates, N. (2015). *Participatory Action Research: New Uses, New Contexts, New Challenges*
776 (No. 15–6; PRARI Working Paper).
777 [https://www.researchgate.net/profile/Ana_Amaya2/publication/281559928_Participatory_Action_](https://www.researchgate.net/profile/Ana_Amaya2/publication/281559928_Participatory_Action_Research_New_uses_new_contexts_new_challenges/links/55ee2d4508aedecb68fc7b48/Participatory-Action-Research-New-uses-new-contexts-new-challenges.pdf)
778 [Research_New_uses_new_contexts_new_challenges/links/55ee2d4508aedecb68fc7b48/Participator](https://www.researchgate.net/profile/Ana_Amaya2/publication/281559928_Participatory_Action_Research_New_uses_new_contexts_new_challenges/links/55ee2d4508aedecb68fc7b48/Participatory-Action-Research-New-uses-new-contexts-new-challenges.pdf)
779 [y-Action-Research-New-uses-new-contexts-new-challenges.pdf](https://www.researchgate.net/profile/Ana_Amaya2/publication/281559928_Participatory_Action_Research_New_uses_new_contexts_new_challenges/links/55ee2d4508aedecb68fc7b48/Participatory-Action-Research-New-uses-new-contexts-new-challenges.pdf)
- 780 Artur, L., Hilhorst, D., 2012. Everyday realities of climate change adaptation in Mozambique. *Global*
781 *Environmental Change* 22, 529–536. <https://doi.org/10.1016/j.gloenvcha.2011.11.013>
- 782 Bahadur, A.V., Ibrahim, M., Tanner, T., 2013. Characterising resilience: unpacking the concept for
783 tackling climate change and development. *Climate and Development* 5, 1–11.
784 <https://doi.org/10.1080/17565529.2012.762334>
- 785 Becker, D., Schneiderbauer, S., Forrester, J., Pedoth, L., 2019. Combining quantitative and qualitative
786 indicators for assessing community resilience to natural hazards. pp. 139–153.
787 <https://doi.org/10.1002/9781119166047.ch10>
- 788 Béné, C., 2013. Towards a Quantifiable Measure of Resilience. IDS Working Paper.

789 Béné, C., Chowdhury, F.S., Rashid, M., Dhali, S.A., Jahan, F., 2017. Squaring the Circle: Reconciling
790 the Need for Rigor with the Reality on the Ground in Resilience Impact Assessment. *World*
791 *Development* 97, 212–231. <https://doi.org/10.1016/j.worlddev.2017.04.011>

792 Béné, C., & Doyen, L. 2018. From Resistance to Transformation: A Generic Metric of Resilience
793 Through Viability. *Earth's Future*, 6(7), 979–996. <https://doi.org/10.1002/2017ef000660>

794 Béné, C., Frankenberger, T.R., Nelson, S. 2015. Design, Monitoring and Evaluation of Resilience
795 Interventions: Conceptual and Empirical Considerations. IDS Working Paper.

796 Berkes, F., Ross, H., 2013. Community Resilience: Toward an Integrated Approach. *Society & Natural*
797 *Resources* 26, 5–20. <https://doi.org/10.1080/08941920.2012.736605>

798 Betz, F. 2016. Contextual methodology in the social sciences: Historiography, middle-range-theory, &
799 models. *Advances in Social Sciences Research Journal*, 3 (7). <https://doi.org/10.14738/assrj.37.2108>.

800 Biermann, M., Hillmer-Pegram, K., Knapp, C. N., & Hum, R. E. (2015). Approaching a critical turn? A
801 content analysis of the politics of resilience in key bodies of resilience literature. *Resilience*, 4(2), 1–
802 20. <https://doi.org/10.1080/21693293.2015.1094170>

803 Birkmann, J., 2013. Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies.

804 Borie, M., Pelling, M., Ziervogel, G., Hyams, K., 2019. Mapping narratives of urban resilience in the
805 global south. *Global Environmental Change* 54, 203–213.
806 <https://doi.org/10.1016/j.gloenvcha.2019.01.001>

807 Brand, F. S., & Jax, K. (2007). Focusing the Meaning(s) of Resilience: Resilience as a Descriptive
808 Concept and a Boundary Object. *Ecology and Society*, 12(1), 1–16.

809 Brooks, R., Lainio, A., & Lažetić, P. (2019). Using creative methods to research across difference. An
810 introduction to the special issue. *International Journal of Social Research Methodology*, 23(1), 1–6.
811 <https://doi.org/10.1080/13645579.2019.1672281>

812 Brown, K., 2014. Global environmental change I: A social turn for resilience? *Progress in Human*
813 *Geography* 38, 107–117. <https://doi.org/10.1177/0309132513498837>

814 Brown, K., Westaway, E., 2011. Agency, Capacity, and Resilience to Environmental Change: Lessons
815 from Human Development, Well-Being, and Disasters. *Annual Review of Environment and*
816 *Resources* 36, 321–342. <https://doi.org/10.1146/annurev-environ-052610-092905>

817 Bruijn, K. de, Buurman, J., Mens, M., Dahm, R., Klijn, F., 2017. Resilience in practice: Five principles to
818 enable societies to cope with extreme weather events. *Environmental Science and Policy* 70, 21–30.
819 <https://doi.org/10.1016/j.envsci.2017.02.001>

820 Carpenter, S., Walker, B., Anderies, J.M., Abel, N., 2001. From Metaphor to Measurement: Resilience
821 of What to What? *Ecosystems* 4, 765–781. <https://doi.org/10.1007/s10021-001-0045-9>

822 Carr, E.R., 2019. Properties and projects: Reconciling resilience and transformation for adaptation and
823 development. *World Development VL - IS - SP - EP - PY - T2 - 122*, 70–84.
824 <https://doi.org/10.1016/j.worlddev.2019.05.011>

825 Chu, E., & Michael, K. (2019). Recognition in urban climate justice: marginality and exclusion of
826 migrants in Indian cities. *Environment & Urbanization*, 31(1), 139–156.
827 <https://doi.org/10.1177/0956247818814449>

828 Cote, M., Nightingale, A.J., 2012. Resilience thinking meets social theory: Situating social change in
829 socio-ecological systems (SES) research. *Progress in Human Geography* 36, 475–489.
830 <https://doi.org/10.1177/0309132511425708>

831 Cumming, G.S., Barnes, G., Perz, S., Schmink, M., Sieving, K.E., Southworth, J., Binford, M., Holt,
832 R.D., Stickler, C., Holt, T.V., 2005. An Exploratory Framework for the Empirical Measurement of
833 Resilience. *Ecosystems* 8, 975–987. <https://doi.org/10.1007/s10021-005-0129-z>

834 Cutter, S.L., Burton, C.G., Emrich, C.T., 2010. Disaster Resilience Indicators for Benchmarking
835 Baseline Conditions. *Journal of Homeland Security and Emergency Management* 7.
836 <https://doi.org/10.2202/1547-7355.1732>

837 Dodman, D., Mitlin, D., 2011. Challenges for community-based adaptation: discovering the potential
838 for transformation. *Journal of International Development* 25, n/a-n/a.
839 <https://doi.org/10.1002/jid.1772>

840 Ehmke, M. D., J. L. Lusk and J. A. List (2008). Is Hypothetical Bias a Universal Phenomenon? A
841 Multinational Investigation. *Land Economics*, 84(3), 489–500.
842 https://www.jstor.org/stable/27647839?seq=2#metadata_info_tab_contents

843 Ensor, J.E., Park, S.E., Attwood, S.J., Kaminski, A.M., Johnson, J.E., 2016. Can community-based
844 adaptation increase resilience? *Climate and Development* 10, 134–151.
845 <https://doi.org/10.1080/17565529.2016.1223595>

846 Ensor, J.E., Park, S.E., Hoddy, E.T., Ratner, B.D., 2015. A rights-based perspective on adaptive
847 capacity. *Global Environmental Change* 31, 38–49. <https://doi.org/10.1016/j.gloenvcha.2014.12.005>

848 Fainstein, S., 2015. Resilience and Justice. *International Journal of Urban and Regional Research* 39,
849 157–167. <https://doi.org/10.1111/1468-2427.12186>

850 Fals-Borda, O. (1987). The Application of Participatory Action-Research in Latin America.
851 *International Sociology*, 2(4), 329–347. <https://doi.org/10.1177/026858098700200401>

852 Few, R., Morchain, D., Spear, D., Mensah, A., & Bendapudi, R. (2017). Transformation, adaptation and
853 development: relating concepts to practice. *Palgrave Communications*, 3, 17092.
854 <https://doi.org/10.1057/palcomms.2017.92>

855 Folke, C., 2003. Freshwater for resilience: a shift in thinking. *Philosophical Transactions of the Royal*
856 *Society B: Biological Sciences* 358, 2027–2036. <https://doi.org/10.1098/rstb.2003.1385>

857 Folke, C., Carpenter, S.R., Walker, B., Scheffer, M., Chapin, T., Rockström, J., 2010. Resilience thinking:
858 integrating resilience, adaptability and transformability. *Ecology and Society* 15, 20.

859 Forsyth, T., 2013. Community-based adaptation: a review of past and future challenges. Wiley
860 *Interdisciplinary Reviews: Climate Change* 4, 439–446. <https://doi.org/10.1002/wcc.231>

861 Fraser, Nancy (1997), *Justice Interruptus: Critical Reflections on the 'Postsocialist' Condition*, New
862 York: Routledge.

863 Fraser, Nancy (2000), 'Rethinking Recognition', *New Left Review*, May/June, pp.107–20.

864 Fricker, M. (2007). *Epistemic Injustice: Power and the Ethics of Knowing*. Oxford.
865 <https://doi.org/10.1093/acprof:oso/9780198237907.001.0001>

866 Granderson, A.A., 2014. Making sense of climate change risks and responses at the community level:
867 a cultural-political lens. *Climate Risk Management* 3, 55–64.
868 <https://doi.org/10.1016/j.crm.2014.05.003>

869 Grove, K., Barnett, A., & Cox, S. (2020). Designing justice? Race and the limits of recognition in greater
870 Miami resilience planning. *Geoforum*. <https://doi.org/10.1016/j.geoforum.2020.09.014>

871 Harris, L.M., Chu, E.K., Ziervogel, G., 2017. Negotiated resilience. *Resilience* 1–19.
872 <https://doi.org/10.1080/21693293.2017.1353196>

- 873 Harrison, E., Chiroro, C., 2016. Differentiated legitimacy, differentiated resilience: beyond the natural
874 in 'natural disasters.' *The Journal of Peasant Studies* 44, 1–21.
875 <https://doi.org/10.1080/03066150.2016.1193011>
- 876 Hayward, B.M., 2013. Rethinking resilience: reflections on the earthquakes in Christchurch, New
877 Zealand, 2010 and 2011. *Ecology and Society*.
- 878 Icaza, R., & Vázquez, R. (2013). Social Struggles as Epistemic Struggles. *Development and Change*, 44(3),
879 683–704. <https://doi.org/10.1111/dech.12039>
- 880 Jon, I. (2018). Resilience and 'technicity': challenges and opportunities for new knowledge practices in
881 disaster planning. *Resilience*, 16(3), 1–19. <https://doi.org/10.1080/21693293.2018.1461481>
- 882 Jones, L., Boyd, E., 2011. Exploring social barriers to adaptation: Insights from Western Nepal. *Global*
883 *Environmental Change* 21, 1262–1274. <https://doi.org/10.1016/j.gloenvcha.2011.06.002>
- 884 Jones, L., Tanner, T., 2016. 'Subjective resilience': using perceptions to quantify household resilience
885 to climate extremes and disasters. *Regional Environmental Change* 17, 229–243.
886 <https://doi.org/10.1007/s10113-016-0995-2>
- 887 Jones, L. 2019. Resilience isn't the same for all: Comparing subjective and objective approaches to
888 resilience measurement. *Wiley Interdisciplinary Reviews: Climate Change*, 10(1), e552.
889 <https://doi.org/10.1002/wcc.552>
- 890 Johnsen, K. I., Benjaminsen, T. A., & Eira, I. M. G. 2015. Seeing like the state or like pastoralists?
891 Conflicting narratives on the governance of Sámi reindeer husbandry in Finnmark, Norway. *Norsk*
892 *Geografisk Tidsskrift - Norwegian Journal of Geography*, 69(4), 230–241.
893 <https://doi.org/10.1080/00291951.2015.1033747>

894 Kang, N. 2014. Towards middle-range theory building in development research: Comparative
895 (historical) institutional analysis of institutional transplantation. *Progress in Development Studies*,
896 14(3), 221–235. <https://doi.org/10.1177/1464993414521338>.

897 Kruse, S., Abeling, T., Deeming, H., Fordham, M., Forrester, J., Jülich, S., Karanci, A.N., Kuhlicke, C.,
898 Pelling, M., Pedoth, L., Schneiderbauer, S., Sharpe, J., 2019. The emBRACE Resilience Framework:
899 Developing an Integrated Framework for Evaluating Community Resilience to Natural Hazards.

900 Leach, M., & Mearns, R. (1996). *The lie of the land: challenging received wisdom on the African*
901 *environment*. James Currey and Heinemann.

902 MacKinnon, D., Derickson, K.D., 2013. From resilience to resourcefulness: A critique of resilience
903 policy and activism. *Progress in Human Geography* 37, 253–270.
904 <https://doi.org/10.1177/0309132512454775>

905 Maclean, K., Ross, H., Cuthill, M., Witt, B., 2016. Converging disciplinary understandings of social
906 aspects of resilience. *Journal of Environmental Planning and Management* 60, 1–19.
907 <https://doi.org/10.1080/09640568.2016.1162706>

908 Manuel-Navarrete, D., Pelling, M., 2015. Subjectivity and the politics of transformation in response to
909 development and environmental change. *Global Environmental Change* 35, 558–569.
910 <https://doi.org/10.1016/j.gloenvcha.2015.08.012>

911 Massarella, K., Sallu, S. M., & Ensor, J. E. (2020). Reproducing injustice: Why recognition matters in
912 conservation project evaluation. *Global Environmental Change*, 65, 102181.
913 <http://www.sciencedirect.com/science/article/pii/S0959378020307640>

914 Matin, N., Forrester, J., Ensor, J., 2018. What is equitable resilience? *World Development* VL - IS - SP -
915 EP - PY - T2 - 109, 197–205. <https://doi.org/10.1016/j.worlddev.2018.04.020>

916 Matyas, D., & Pelling, M. (2015). Positioning resilience for 2015: the role of resistance, incremental
917 adjustment and transformation in disaster risk management policy. *Disasters*, 39(s1), s1–s18.
918 <https://doi.org/10.1111/disa.12107>

919 McConkey, J. (2004). Knowledge and Acknowledgement: ‘Epistemic Injustice’ as a Problem of
920 Recognition. *Politics*, 24(3), 198–205. <https://doi.org/10.1111/j.1467-9256.2004.00220.x>

921 Mikulewicz, M. (2019). Thwarting adaptation’s potential? A critique of resilience and climate-resilient
922 development. *Geoforum*, 104, 267–282. <https://doi.org/10.1016/j.geoforum.2019.05.010>

923 Mohan, G., Stokke, K., 2000. Participatory development and empowerment: The dangers of localism.
924 *Third World Q* 21, 247–268. <https://doi.org/10.1080/01436590050004346>

925 Nagoda, S., Nightingale, A.J., 2017. Participation and Power in Climate Change Adaptation Policies:
926 Vulnerability in Food Security Programs in Nepal. *World Development VL - IS - SP - EP - PY - T2 -*
927 *100*, 85–93. <https://doi.org/10.1016/j.worlddev.2017.07.022>

928 Nguyen, K.V., James, H., 2013. Measuring Household Resilience to Floods: a Case Study in the
929 Vietnamese Mekong River Delta. *Ecology and Society* 18, art13. [https://doi.org/10.5751/es-05427-](https://doi.org/10.5751/es-05427-180313)
930 *180313*

931 Olsson, L., Jerneck, A., Thoren, H., Persson, J., & O’Byrne, D. (2015). Why resilience is unappealing to
932 social science: Theoretical and empirical investigations of the scientific use of resilience. *Science*
933 *Advances*, 1(4), e1400217–e1400217. <https://doi.org/10.1126/sciadv.1400217>

934 Pelling, M., Garschagen, M., 2019. Put equity first in climate adaptation. 327–329.

935 Pellow, D. N. (2016). Toward a critical environmental justice studies. *Du Bois Review: Social Science*
936 *Research on Race*, 13(2), 221–236. <https://doi.org/10.1017/s1742058x1600014x>

- 937 Plummer, R., 2009. The Adaptive Co-Management Process. *Ecology and Society* 14.
938 <https://doi.org/10.2307/26268333>
- 939 Prior, T., Hagmann, J., 2013. Measuring resilience: methodological and political challenges of a trend
940 security concept. *Journal of Risk Research* 17, 281–298.
941 <https://doi.org/10.1080/13669877.2013.808686>
- 942 Quinlan, A.E., Blázquez, M.B., Haider, L.J., Peterson, G.D., 2016. Measuring and assessing resilience:
943 broadening understanding through multiple disciplinary perspectives. *Journal of Applied
944 Ecology* 53, 677–687. <https://doi.org/10.1111/1365-2664.12550>
- 945 Renn, O., 2011. The social amplification/attenuation of risk framework: application to climate change.
946 *Wiley Interdisciplinary Reviews: Climate Change* 2, 154–169. <https://doi.org/10.1002/wcc.99>
- 947 Schipper, E., Langston, L., 2015. A comparative overview of resilience measurement frameworks.
- 948 Schlosberg, D. (2004). Reconceiving Environmental Justice: Global Movements And Political Theories.
949 *Environmental Politics*, 13(3), 517–540. <https://doi.org/10.1080/0964401042000229025>
- 950 Schuler, S.R., Lenzi, R., Badal, S.H., Nazneen, S., 2017. Men’s perspectives on women’s empowerment
951 and intimate partner violence in rural Bangladesh. *Cult Heal Sex* 20, 113–127.
952 <https://doi.org/10.1080/13691058.2017.1332391>
- 953 See, J., & Wilmsen, B. (2020). Just adaptation? Generating new vulnerabilities and shaping adaptive
954 capacities through the politics of climate-related resettlement in a Philippine coastal city. *Global
955 Environmental Change*, 65, 102188. <https://doi.org/10.1016/j.gloenvcha.2020.102188>
- 956 Sina, D., Chang-Richards, A.Y., Wilkinson, S., Potangaroa, R., 2019. A conceptual framework for
957 measuring livelihood resilience: Relocation experience from Aceh, Indonesia. *World Development*
958 VL - IS - SP - EP - PY - T2 - 117, 253–265. <https://doi.org/10.1016/j.worlddev.2019.01.003>

- 959 Sultana, F., 2009. Fluid lives: subjectivities, gender and water in rural Bangladesh. *Gender, Place &*
960 *Culture* 16, 427–444. <https://doi.org/10.1080/09663690903003942>
- 961 Svarstad, H., & Benjaminsen, T. A. (2020). Reading radical environmental justice through a political
962 ecology lens. *Geoforum*, 108, 1–11. <https://doi.org/10.1016/j.geoforum.2019.11.007>
- 963 Tanner, T., Lewis, D., Wrathall, D., Bronen, R., Cradock-Henry, N., Huq, S., Lawless, C., Nawrotzki,
964 R., Prasad, V., Rahman, M.A., Alaniz, R., King, K., McNamara, K., Nadiruzzaman, M., Henly-
965 Shepard, S., Thomalla, F., 2015. Livelihood resilience in the face of climate change. *Nature Climate*
966 *Change* 5, 23–26. <https://doi.org/doi:10.1038/nclimate2431>
- 967 Tebboth, M.G.L., Conway, D., Adger, W.N., 2019. Mobility endowment and entitlements mediate
968 resilience in rural livelihood systems. *Global Environmental Change* 54, 172–183.
969 <https://doi.org/10.1016/j.gloenvcha.2018.12.002>
- 970 Temper, L. (2018). Blocking pipelines, unsettling environmental justice: from rights of nature to
971 responsibility to territory. *Local Environment*, 24(2), 1–19.
972 <https://doi.org/10.1080/13549839.2018.1536698>
- 973 Thomalla, F., Boyland, M., Johnson, K., Ensor, J., Tuhkanen, H., Swartling, Å.G., Han, G., Forrester, J.,
974 Wahl, D., 2018. Transforming Development and Disaster Risk. *Sustainability* 10, 1458.
975 <https://doi.org/10.3390/su10051458>
- 976 Vogel, C., Moser, S. C., Kasperson, R. E., & Dabelko, G. D. (2007). Linking vulnerability, adaptation,
977 and resilience science to practice: Pathways, players, and partnerships. *Global Environmental*
978 *Change*, 17(3–4), 349–364. <https://doi.org/10.1016/j.gloenvcha.2007.05.002>

979 Walker, B., Gunderson, L., Kinzig, A., Folke, C., Carpenter, S., Schultz, L., 2006. A handful of
980 heuristics and some propositions for understanding resilience in social-ecological systems.
981 Ecology and Society 11.

982 Walker, B., Holling, C.S., Carpenter, S.R., Kinzig, A., 2004. Resilience, adaptability and
983 transformability in social–ecological systems. Ecology and Society 9.

984 Walker, G., & Day, R. (2012). Fuel poverty as injustice: Integrating distribution, recognition and
985 procedure in the struggle for affordable warmth. *Energy Policy*, 49, 69–75.
986 <https://doi.org/10.1016/j.enpol.2012.01.044>

987 Walsh-Dilley, M., & Wolford, W. (2015). (Un)Defining resilience: subjective understandings of
988 ‘resilience’ from the field. *Resilience*, 3(3), 173–182. <https://doi.org/10.1080/21693293.2015.1072310>

989 Walsh-Dilley, M., Wolford, W., McCarthy, J., 2016. Rights for resilience: food sovereignty, power, and
990 resilience in development practice. Ecology and Society 21, art11. [https://doi.org/10.5751/es-07981-](https://doi.org/10.5751/es-07981-210111)
991 210111

992 Wilmsen, B., & Rogers, S. (2019). Planned resettlement to avoid climatic hazards: What prospects for
993 just outcomes in China? *Asia Pacific Viewpoint*, 60(2), 118–131. <https://doi.org/10.1111/apv.12232>

994 Yates, J.S., 2012. Uneven interventions and the scalar politics of governing livelihood adaptation in
995 rural Nepal. *Global Environmental Change* 22, 537–546.
996 <https://doi.org/10.1016/j.gloenvcha.2012.01.007>

997 Ziervogel, G., Pelling, M., Cartwright, A., Chu, E., Deshpande, T., Harris, L., Hyams, K., Kaunda, J.,
998 Klaus, B., Michael, K., Pasquini, L., Pharoah, R., Rodina, L., Scott, D., Zweig, P., 2017. Inserting
999 rights and justice into urban resilience: a focus on everyday risk. *Environment and Urbanization*
1000 29, 123–138. <https://doi.org/10.1177/0956247816686905>