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### Capturing multiple social perspectives on adaptation across scales

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**Capturing multiple social perspectives on adaptation across scales: A Q-method analysis of actors from development planning in the Philippines**

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3 **Capturing multiple social perspectives on adaptation across scales:**  
4 **A Q-method analysis of actors from development planning in the Philippines**  
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8 ***Abstract***  
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11 This paper describes and analyses viewpoints regarding climate change adaptation held among  
12 key social actors from the field of development planning in the Philippines. Four empirically  
13 significant social perspectives are determined – institutional, grassroots, developmental and  
14 physical planning – using Q-method, an intensive qualitative and quantitative technique. Major  
15 differences and commonalities between perspectives are highlighted, in addition to actors'  
16 arguments used to justify claims. Drawing upon an actor-oriented approach, results contribute  
17 filling a knowledge gap in the literature on the need to develop approaches that can guide  
18 adaptation thinking in development planning. While the four perspectives identified provide  
19 evidence that differentiated viewpoints on climate change and planning practices may lead to  
20 divergent adaptation strategies, commonalities among social perspectives suggest that shared  
21 adaptations may also emerge both among actors from multiple organizational structures and  
22 across the organisational hierarchy of planning. By building learning processes that include  
23 multiple social perspectives across scales, development planning can become a promising  
24 candidate for strengthening adaptive capacities and delivering more effective responses to  
25 climate change.  
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30 **Key words:** Climate change adaptation, development planning, social perspectives, Q-method,  
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## 1. Introduction

Concerns about the nature, pace and implications of climate change have been the subject of scientific debates for many years. Recently, the inclusion of a broad range of actors is frequently promoted in policy responses to climate change. References to 'participation', 'stakeholder engagement', 'bottom-up' processes, and other terms associated with a discourse of inclusive governance are widespread (Few, Brown, & Tompkins, 2007). In this regard, the Intergovernmental Panel on Climate Change (IPCC) claims with "high confidence" (Yohe et al., 2007, p.813) that participatory processes can reduce vulnerability to the hazards associated with current and future climate variability and extremes. Such a call for inclusive governance has been echoed within the fields of planning and development where inclusive practices are often promoted for fundamentally reinforcing key aspects of adaptation.

Understood as the link between knowledge and action (Friedmann, 1987), development planning can help foreseeing and guiding change by undertaking actions to reduce the risks and capitalize on the opportunities associated with global climate change (Füssel, 2007; Hall, 1982; Potter, 1985; Pugh & Potter, 2003). Interdisciplinary, multi-scale, stressing the physical, yet inescapably social, it can also support the inclusion of multiple actors within planning processes in order to incorporate a knowledge base tailored to local places within adaptation plans (Blanco et al., 2009). Besides, implementing multiple actor processes within planning mechanisms for initiating structural measures creates the potential for more effective risk reduction whilst building capacity, enhancing governance and accountability, and increasing ownership and more sustainable outcomes (Cutter et al., 2012).

Nonetheless, planning theories and development frameworks are often poorly articulated around the challenge of adaptation to climate change, highlighting the need to develop approaches that can guide adaptation thinking in development planning practice (Hedger, Moench, Dixit, Kaur, & Anderson, 2011). Meanwhile, experience in the field of adaptation research shows the increasing importance to recognise the complexities inherent in efforts to engage multiple actors for building adaptive capacity (Engle & Lemos, 2010; Huntjens et al., 2012; Inderberg, Eriksen, O'Brien, & Sygna, 2014). Consequently, this research investigates how to guide adaptation thinking in development planning by building upon a framework that encompasses two key components.

First, climate change is a challenge that cannot be addressed solely by a single level of individual or organisational actor. Although local community actors for instance are critical for action and essential elements for local adaptation, adaptive capacities are not created in a vacuum. Local-level institutions often provide the enabling environment for adaptation planning and implementation (Cutter et al., 2012). Adaptation thus requires 'multi-level' or 'multiscale' governance (Bulkeley & Betsill, 2005; Leck & Simon, 2013), which involves organisations and institutions from both the government and non-government sectors. Likewise, responding to the novel hazards of climate change requires social learning systems enable to take decisions at an appropriate level in the organisational hierarchy (Cash & Moser, 2000).

Second, building successful adaptations requires the capacity to combine various social perspectives. As Pelling (2011) pointed, it is clear that multiple actors will have viewpoints on what to protect, enhance or expend through adaptive actions and these may not be easily

resolved. Hence, capturing various perspectives of multiple actors holding different viewpoints is pivotal in mutually achieving short-term and long-term adaptation needs to climate change (Bardsley & Sweeney, 2010; Corfee-Morlot, Cochran, Hallegatte, & Teasdale, 2011; K. O'Brien & Selboe, 2015; Shaw et al., 2009). As O'Brien (2009) argues, the challenge is to identify adaptation strategies that acknowledge and address a spectrum of values and viewpoints. In contrast to systems that can be objectively measured and observed, these "subjectively influence the adaptations that are considered desirable and thus prioritised" (O'Brien, K., 2009, p.164).

Building upon this framework, this paper investigates the potential role of development planning for strengthening adaptive capacities. In particular, it explores how development planning can create learning processes that incorporate various social perspectives and facilitate developing a common understanding critical for multiscale and multiple actors' actions. An actor-oriented approach focusing on state and non-state actors is undertaken by accounting for government and civil society organisations (CSOs) involved in both planned and autonomous adaptation strategies<sup>1</sup>. Such an approach recognizes multiple simultaneous adaptations, but also betrays a critical issue, i.e. the potential mismatch between adaptation efforts of planned and autonomous activities. This kind of interaction has been recognised between two types of actors, such as when community adaptations are undermined by local government actions (Adger, Arnell, & Tompkins, 2005; Bulkeley & Betsill, 2005). Yet, poor evidence exists as to how actors engaged in those two forms of adaptation strategies may hold conflicting viewpoints on adaptation (Engle & Lemos, 2010; Hedger et al., 2011; Huntjens et al., 2012).

The aim of this study is thus two-fold: (i) to capture multiple social perspectives on climate change adaptation and planning practices across the organisational hierarchy of planning, and (ii) to examine whether commonalities and differences among these perspectives may lead towards divergent or convergent adaptation strategies. Within the next sections, we first introduce the adaptation and development planning context of our case study, the Philippines. Then, we implement the Q-method, an intensive qualitative and quantitative technique for examining and characterizing multiple actors' viewpoints. Lastly, we detail four social perspectives and further discuss their commonalities and differences.

## 2. Study area

Climate change poses a unique set of challenges to archipelagic countries such as the Philippines. Due to its geography, the country is one of the top most disaster prone countries in the world facing climate-induced hazards such as tropical cyclones, droughts, landslides, and floods (Birkmann et al., 2011). Yet, climate change is exacerbating these hazards, which are likely to increase as climate projections foresee an increase in the frequency and severity of those events (Van Aalst, 2006). Global warming and sea level rise also potentially affect settlement patterns, agricultural systems, fishing practices and other livelihood pursuits in various ways (Capili, Ibay, & Villarin, 2005; Rincón & Virtucio, 2008). In this context, the Philippines needs to address climate-related risks because of its exposure and relative vulnerability, but also because it needs to further develop its adaptive capacity (AKP, 2012). The country's existing

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<sup>1</sup> Planned adaptation is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state. By contrast, autonomous adaptation is a response to experienced climate and its effects, without planning explicitly or consciously focused on addressing climate change (Agard et al., 2014).

89 adaptive capacity is drawn upon pre-existent disaster risk reduction and management (DRRM)  
90 activities, but has now to be enhanced where possible, avoiding to start from scratch and  
91 duplicating current initiatives (IDS, 2010).

92  
93 This study focuses on the island province of Bohol in the central Visayas region (see Figure 1).  
94 Referred in the country as being at the forefront of local governance (Cañares, 2014), the  
95 province of Bohol has a great potential for building adaptation strategies resulting from the  
96 interactions between different levels of social actors and institutions. There are numerous climate  
97 change adaptation strategies undertaken by various types of actors depending on their focus  
98 areas (see IDS, 2010). Among the most active in the field of development planning are  
99 government agencies and civil society organisations.

100  
101 On the government side, Local Government Units (LGUs)<sup>2</sup> in Bohol are mainly involved in  
102 planned adaptation strategies through current efforts of mainstreaming climate change adaption  
103 into development planning at all levels of governance, as required by the Climate Change Act.  
104 Being a pilot province for the project named “Integrating Disaster Risk Reduction and Climate  
105 Change Adaptation in Local Planning and Decision-making Processes”, LGUs from Bohol are  
106 additionally solicited to address the challenge of climate change in local development planning.  
107 By law, *barangays* (i.e. the smallest political administrative division) should identify issues, best  
108 practices and implement solutions, while the municipal and city governments are mandated to  
109 consider adaptation as one of their regular functions. The provincial governments in turn shall  
110 provide technical assistance, enforcement, and information management support to  
111 municipalities and cities (AKP, 2012).

112  
113 CSOs in Bohol, on the other side, are mostly involved in autonomous adaptation by developing  
114 strategies not explicitly related to climate change, but aimed at reducing vulnerability and  
115 enhancing overall adaptive capacity of individuals and communities in areas of high climate  
116 impacts. In this regard, the most active NGOs on the island are committed to address pressing  
117 socio-economic and environmental issues by strengthening and capacitating local communities  
118 and development organisations such as People’s Organizations (PO) and cooperatives (e.g.  
119 farmers, fishers, and women). These kind of autonomous actions can improve the overall  
120 adaptive capacity of households without necessarily targeting a particular climatic stressor or  
121 addressing a climate extreme event.

122  
123 However, an integrated strategy linking the national, planned and local, autonomous  
124 development practices still has to be built both within and in-between civil society forces and the  
125 government at various levels. Resurreccion et al. (2008) for instance pointed a mismatch  
126 between national level discussions with broad-scale scoping, and local level realities in  
127 adaptation where macro scale analysis of climate change are unresponsive to local needs and  
128 realities for adaptation. Within the next section, such a disjunction between planned and  
129 autonomous forms of adaptation is addressed by comparing actors’ viewpoints from the field of  
130 development planning in the Philippines.

131  
132 Fig. 1. Study area and survey sites

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<sup>2</sup> A LGU in the Filipino context may be a province, a city, a municipality, or a *barangay* in the descending order of geographical scale and scope of political power. In geographical terms, each LGU has its own territorial jurisdiction but the smaller unit is embedded in the next higher unit forming a nested pattern (DILG, 2008).



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### 3. Method and data

This study relies on Q-method (Brown, 1980; Stephenson, 1935) to understand and describe the variety of subjective viewpoints regarding climate change adaptation held among actors from government agencies and civil society organisations in the Philippines. Used as “a powerful tool for anti-essentialist approaches to subjectivity and for constructivist inquiries” (Robbins & Krueger, 2000, p.636), it provides a methodological framework for a systematic, multi-scalar examination of social perspectives across the scales of the organisational hierarchy of planning. Most typically in Q, a person is presented with a set of subjective statements about some topic, and is asked to rank-order them. Based upon this sorting exercise called ‘Q-sort’, factor analysis is processed to identify patterns in individuals’ Q-sorts. What factor analysis does is to mathematically create a few new variables that explain variation in many variables. In a Q-method survey the variables are the Q-sorts where the factor analysis attempts to bring the complexity of multiple individuals’ Q-sorts down to a simpler picture. Once the factor is described in the language of the Q statements, it becomes the product of the Q-method survey. The individuals’ Q-sorts are individual viewpoints, but the factor analysis solutions reflect “deeper organizing principles” (Stephenson 1965) called social perspectives for the purpose of this paper.

The Q-method was implemented according to four main steps. First, a concourse of 40 statements was elaborated. The concourse builds upon our main research question by translating subjective ways of perceiving climate change and strengthening adaptive capacities. It aims at bringing controversial viewpoints to the fore on climate change adaptation and planning practices in the Philippines. Statements are a matter of opinion and drew upon the scientific literature, key reports and documents (e.g. the 1st Bohol Climate Change Summit 2010), and interviews with key informants (i.e. experts from the academia and research institutes, provincial and municipal government officers from planning, environment and governance offices, and active leaders of local NGOs). Three main areas of enquiry were identified: climate change perception, adaptation approach, and planning practices (see Table 3). As statements were submitted to respondents with a wide range of backgrounds, these were translated in Visayan for increasing readability with respondents feeling less comfortable with English.

During the second step, respondents were identified using purposive, non-random sampling to sort the statements on a scale from -3 to +3 according to their degree of (dis)agreement. When sorting statements, the internal frame of reference of each respondent is embedded in their responses. The Q-method thus fully engages with the respondent's own logic and their personal experiences. Q methodologically does not ascribe any *a priori* meaning to the statements in question. Meanings are created during the process of responses, which contrasts with R methods in which both variables and tests in question are constructed by the researcher's frame of reference (McKeown & Thomas, 1988).

The methodology was implemented with a purposeful sample of 37 respondents from government agencies and civil society organisations during August and September 2013 (Table 1). Main respondents surveyed were from both the fields of planning and development in the province of Bohol. Complementarily, associated respondents from higher levels of the planning hierarchy were considered at the regional and national levels for their involvement in

179 mainstreaming climate change adaptation into local development planning. Q-sorts were  
180 administered under the condition of an unconstrained sort, i.e. no particular statistical distribution  
181 was forced on the rating of statements (Barry & Proops, 1999; McKeown & Thomas, 1988).  
182 During the sorting exercise, subsidiary open questions were asked in order to discuss  
183 respondents' choices. Q-sorts lasted 43 minutes on average.

184

185 Table 1.

186

187 The third step involved the sequential application of three sets of statistical procedures, i.e.:  
188 correlation, factor or principal component (PCA) analysis, and the computation of factor scores  
189 (see Robbins, 2005; Zabala, 2014). Following the Q-method, a PCA analysis was carried out on  
190 a data matrix with the 37 Q-sorts as variables (columns) and all statements as sample elements  
191 (rows) with the aim to group respondents on the basis of the degree of commonality of their  
192 viewpoints on statements. Then, factors were extracted by retaining those with both theoretical  
193 and statistical significance in order to perform the Q-method reflexively with "full awareness of its  
194 interpretive dimensions and not as a number-crunching exercise" (Eden, Donaldson, & Walker,  
195 2005, p.421). To achieve this, Brown (1980's) criteria which retains factors containing at least two  
196 loadings in excess of the 0,01 or 0,05 level of significance was used. Besides, a Promax rotation  
197 (see Abdi, 2003) was performed on the Q matrix in order to facilitate data interpretability

198

199 Fourth, factors were interpreted as social perspectives by selecting defining Q-sorts or "like-  
200 minded individuals" (Pini, Previte, & Haslam-McKenzie, 2007, p.8) loading significantly on the  
201 same factor<sup>3</sup>.

202 Factors are "attitudes of mind" (Stephenson, 1965, p.281) held in common by several  
203 respondents. In order to inform their interpretation, coded interview transcripts were essential in  
204 eliciting the rationale of respondents' viewpoint. In total, 27h27 minutes of audio records were  
205 transcribed and an average number of 32 comments per statement were extracted for  
206 interpretation.

207

208 Implementing the Q-method is of particular interest for capturing actors' viewpoints on climate  
209 change adaptation as it allows going beyond methodological individualism, i.e. the view that  
210 social events must be explained by reducing them to individual actions, and accounting for the  
211 post-structuralist assumption that meaning and action in development planning are made of  
212 systemic relations between individuals and underlying structures (Murdoch, 2006). The power of  
213 the Q-method lies in the determination of social perspectives reflecting a totality or *gestalt* that is  
214 greater than the sum of the part. As Brown (1980, p.14) explains, one of the core features of the  
215 Q factor analysis is that "it is more gestaltist and wholistic, rather than analytic and atomistic, and  
216 reflects functional relatedness", meaning that individual's viewpoint is captured in accordance  
217 with its relation to the whole context of which it is a part. In other words, the method overcomes  
218 the distinction between apparent forms of reality from respondents' speech and essential  
219 underlying, constitutive structures and relations between these and their organizations for  
220 instance. In the next section, we detail the results obtained after implementing this four-step  
221 analysis.

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<sup>3</sup> 'Defining sorts' were identified in this study according to two conditions: (i) the 5% level of significance, and (ii) the condition that the factor explains more than half of the common variance.



## 4. Results

Four social perspectives could be extracted from the dataset drawing upon experience in the field, a careful statistical examination of data, and interview transcripts. The PCA yielded four factors accounting respectively for 18,5%, 14,0%, 13,6%, 8,2% of the explained variance. In total, 8 out of 37 participants have significant loadings on factor 1, 8 on factor 2, 9 on factor 3 and 3 on factor 4 (see Table 2). Factors are all positively correlated suggesting a convergence of respondent's viewpoints on the concourse of statements. As a result, the four factors extracted represent social perspectives that are divergent but not opposite to each other. Two factors, F1 and F3, have the strongest correlation (0,798), while F2 and F4 are the most weakly correlated (0,331). In Q-method, this further suggests that respondents defining F1 and F3 share closer viewpoints, while F2 and F4 tend to present more differentiated ones.

Table 2 presents the factors in which the entries in the table are called factor loadings. The latter represent the extent to which a respondent is associated with a particular factor. As Table 2 shows, the highest significant factor loading of F1 (0,876) belongs to a Provincial planning and development officer (Q01) and thus contributes the most to characterize the first social perspective associated with F1, named "the institutional perspective". Most defining sorts on this factor are provincial, regional and national officers from government agencies. Their structural position within the organisational hierarchy of planning allows providing plausible explanations for attitudes of mind held in common. However, not all government officers load highest on F1, and two Q-sorts from NGO representatives loaded significantly on this factor (Q06 and Q08).

Table 2

Table 3 presents per factor the weighted scores for each statement. These scores are calculated and normalized as factor scores (abbreviated 'z-scores'). They are subsequently converted into rank statement scores for ease of interpretation, i.e. factor scores are expressed in terms of the original Q frequency distribution of (-3, -2, -1, 0, 1, 2, 3). The array of factor scores show the best model for the perspective and represent a summary of "significantly different assemblages of claims" (Robbins & Krueger, 2000, p.639). Likewise, each perspective represents a coherent pattern of opinion about climate change, adaptation, and planning practices in the Philippines. Within the next sections, the four social perspectives identified are empirically determined by describing the factor in the language of the Q-statements and the arguments used by respondents to justify their claims.

Table 3

### 4.1. The institutional perspective

F1 represents an institutional perspective that supports planned adaptation by highly valuing a strong role of government institutions, including through the mainstreaming climate change adaptation into local development planning.

Several significantly different statements characterize the institutional perspective, the most prominent of which pertains to the role of governments compared to NGOs for building adaptive capacity. A legitimization of government's role is expressed in the negative ranking of statement

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3 269 20 (see S20 in Table 3,  $z=-1,07$ ). In this perspective, NGOs are seen as lacking resources for  
4 270 initiating and sustaining capacity building initiatives. When considering the elaboration of climate  
5 271 change adaptation plans, a climate change officer (see Q02 in Table 2,  $F1=0,844$ ) for instance  
6 272 explains that NGOs need the technical expertise from governments which are the “data  
7 273 producer” of climate change knowledge.  
8 274

9  
10 275 Besides, such a pro-government perspective is supported by the idea that governments can  
11 276 better implement and sustain lasting changes over society than NGOs. This is supported by  
12 277 several assertions arguing that governments are the regulatory bodies with authority on people  
13 278 over the long run because “governments have the power” (Q01) and “make people abide with the  
14 279 laws” (Q03).  
15 280

16 281 The institutional perspective is then further expressed in the negative ranking of statement 2  
17 282 which claims that one cannot go against nature. Respondents who load highly on F1 strongly  
18 283 believe something can be done about climate change in such a way that “once you are prepared  
19 284 you are less likely to be affected” (Q07). In this regard, it emphasizes the potential role of  
20 285 mitigation measures to lessen the negative impacts of disasters. In particular, the institutional  
21 286 perspective advocates for a greater mainstreaming of climate change adaptation at the local level  
22 287 through the involvement of both LGUs and individuals, as well as more pro-activity in order to  
23 288 minimize hazard damages (S19, S23, S27).  
24 289

25 290 Furthermore, the institutional perspective distinctively rejects the idea that climate change is only  
26 291 a threat (S12). Contrary to all three other factors, this perspective considers that benefits exist.  
27 292 One provincial environment officer (Q07) exemplifies the negative score given to this claim telling  
28 293 that climate change is positive for agriculture in the Bohol province, especially rice crops  
29 294 production. Increasing rainfalls may offer the opportunity for farmers to plant four times a year  
30 295 instead of two traditionally, which becomes particularly true for rain fed paddies. In addition, F1  
31 296 loaders consider that climate change can also induce a change in perceptions and attitudes  
32 297 regarding the environment. Taking the example of plastics segregation (instead of dumping or  
33 298 burning), an environmental NGO representative (Q08) further explains that climate change is  
34 299 changing how people do things, their perspectives, attitudes and values regarding the  
35 300 environment.  
36 301

#### 37 38 39 40 41 42 302 *4.2. The grassroots perspective* 43 303

44 304 F2 is a grassroots perspective that supports autonomous adaptation by highly valuing the  
45 305 environment and the need for meeting basic needs. It values a reactive, self-reliant attitude  
46 306 towards disaster risks. This factor is built by three representatives of PO, three NGO workers  
47 307 (two from environmental NGOs, and one from a social development NGO), and two government  
48 308 officers from the municipal and provincial level.  
49 309

50 310 A major component of the grassroots perspective is a strong concern for the environment, which  
51 311 is evident in the high ranking of statement 3 stating that ‘Mother Nature’ should be protected for  
52 312 preventing devastating calamities. Along with this environmentalist stance, the grassroots  
53 313 perspective is characterized by a strong agreement regarding the idea that one cannot go  
54 314 against nature (S02). A PO representative (Q11) justifies a high score by claiming that “Nature  
55 315 cannot be hold” and will always have the last say. In the case of typhoon for instance,  
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3 316 respondents often refer to the strength of the meteorological event, as well as the random  
4 317 character of its path.

5 318

6 319 In the light of climate change perception, F2 loaders claim observing coastal erosion due to  
7 320 strong winds, heavy rain, or soil extraction (S06). However, none blame climate change or  
8 321 explicitly voice a relationship between those two phenomena. Meanwhile, the strong agreement  
9 322 regarding the statistically significantly statement 17 emphasizes a close association between  
10 323 climate change adaptation and DRRM activities, which suggests that F2 loaders have a lower  
11 324 awareness regarding the challenge of climate change. In any event, respondents loading highly  
12 325 on F2 differ from all other factors by strongly agreeing that climate change brings only negative  
13 326 benefits such as “disasters” or “calamities” (S12).

14 327

15 328 The grassroots perspective is also characterised by the highest ranking of the statement claiming  
16 329 that more urgent problems exist than climate change (S13). It is sustained by the idea that  
17 330 people will take measures against climate change only if they are badly affected (S14). For one  
18 331 PO representative (Q12), a “day-by-day” way of living along with a “wait and see” attitude makes  
19 332 common sense.

20 333

21 334 In terms of approach to adaptation and planning practices, the grassroots perspective is  
22 335 characterized by a stronger reliance upon technical and scientific knowledge for addressing  
23 336 climate risks. Regarding climate risk assessment, this perspective distinctively supports that  
24 337 hazard maps should be made by external experts, not by local people (S30). Respondents  
25 338 loading highly on F2 see the former as “the ones telling which area is dangerous” (Q11). Along  
26 339 with this stance, F2 does not value the importance of asking local people to recall past severe  
27 340 weather events as much as all other factors (S29). Meanwhile, F2 also stands out from all other  
28 341 factors by a self-reliant attitude regarding disaster response, particularly given the positive score  
29 342 attributed to statement 22. Based on their experience, F2 loaders comment that the community is  
30 343 faster than LGUs because it is the first one affected, and thus the first one to respond.

31 344

#### 32 345 *4.3. The developmental perspective*

33 346

34 347 F3 represents a developmental perspective that supports planned adaptation, but advocates for  
35 348 a strong role of individuals and local community actors in planning practices. This factor is built  
36 349 upon the viewpoint of five government officers from the *barangay*, municipal, and national level,  
37 350 three NGO workers, and one PO representative. The developmental perspective is positively  
38 351 correlated with the institutional perspective ( $p=0,798$ ), but differs by a stronger commitment for  
39 352 social development.

40 353

41 354 F3 comes into a developmental perspective with statement 15 that advocates for improved living  
42 355 conditions in order to face climate change impacts. A municipal officer (Q22) scored this  
43 356 statement positively, arguing that one may be more adaptive if basic needs are satisfied.  
44 357 Respondents from the NGO sector in turn further argue that improved quality of life would allow  
45 358 “co-opting more easily with the effects of disasters” (Q20), “mak[ing] relocation easier” (Q17) in  
46 359 case of disasters, increasing people participation to DRRM activities, and improving community  
47 360 resilience in general.

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3 362 Besides, the developmental perspective strongly believes that projects from NGOs can be  
4 363 sustained (S21). One Municipal planning and development officer for instance explains that many  
5 364 NGO based projects are still running within his municipality today. In his view, reasons for such a  
6 365 success belong to the project design which should be prepared with both the community and the  
7 366 local government. Projects with “strong sustainability factors” (Q21) will be ensured to be  
8 367 institutionalized at both the Municipality and the Barangay level. While the developmental  
9 368 perspective values NGOs’ work, it also strongly values, along with the institutional perspective,  
10 369 the role of Barangays in responding to climate change impacts and improving adaptive capacity  
11 370 (S19).

12 371  
13 372 Another major characteristic of F3 is an approach to adaptation valuing the role of individuals and  
14 373 local community actors. This is represented by the negative ranking of the distinguishing  
15 374 statement which claims that people will take measures against climate change only if they are  
16 375 badly affected (S14). One municipal officer (Q21) justifies his view by claiming that people’s  
17 376 awareness regarding DRRM and CCA has improved compared to 20 years ago. This belief in  
18 377 individuals’ capacity for mobilization is also highlighted within this perspective through the idea  
19 378 that local citizens do know about the challenge of climate change (S25). In this regard, it  
20 379 positively values the integration of local knowledge in climate risk assessment (S31). A NGO  
21 380 worker (Q20) for instance gave this statement a positive score by reporting that local  
22 381 communities can mark water levels on their house in order to monitor and make comparisons  
23 382 from one year to another.  
24 383

25 384 Lastly, F3 is a pro-planning, but anti-hard measures approach to climate change adaptation. The  
26 385 developmental perspective strongly supports the formulation and implementation of plans for  
27 386 reducing climate risks (S26), but poorly values hard adaptation measures by distinctively  
28 387 supporting that building dikes and sea walls is not a long-term solution (S34).  
29 388

#### 30 389 *4.4. The physical planning perspective*

31 390  
32 391 F4 is a physical planning perspective that supports planned adaptation by emphasizing the  
33 392 importance of spatial planning practices (including building hazard mitigating infrastructures and  
34 393 land use zoning). It is driven by a strong awareness of local disaster risk management issues and  
35 394 the need for urgent, technical responses to current climate change impacts. This factor is  
36 395 represented by two local government officers (one municipal planning and development officer  
37 396 and one *barangay* officer) involved in the implementation of disaster risk reduction and  
38 397 management plans, and one PO representative from an island Barangay experiencing increasing  
39 398 tide heights.  
40 399

41 400 A first major component of F4 is to highly value spatial planning measures for addressing climate  
42 401 risks. F4 presents statistically significant rankings for several statements promoting land use  
43 402 zoning measures and hazard-mitigating infrastructures. Firstly, the statement claiming that land  
44 403 use measures like zoning will prevent from natural hazards received a distinguishing positive  
45 404 score (S32). As a zoning officer, one respondent from a municipal government (Q27) referred to  
46 405 the municipality’s land use plan and zoning ordinance, arguing that all plans should integrate  
47 406 disaster risk prone areas. In line with this pro-land use zoning perspective on climate change  
48 407 adaptation, F4 loaders consider that relocation is one of the best options to avoid floods (S38).  
49 408 Then, the physical planning perspective on adaptation is also determined by the ranking of

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3 409 statements addressing the development of hazard-mitigating infrastructures (S35, S36, and S37).  
4 410 Respondents loading significantly on F4 justified their answers arguing that sea walls can help  
5 411 prevent floods, that better roads should be built, and that building well-designed sewerage  
6 412 systems will prevent the risk of flood.  
7  
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9 414 A second major component of F4 is a moderate account for individuals and communities' role in  
10 415 climate change adaptation. F4 presents a low agreement on the statement advocating more  
11 416 participation from local communities in disaster preparedness activities (S23). This stance comes  
12 417 into sharp perspective by disagreeing about the idea that community responses to calamities are  
13 418 faster and more efficient than LGUs responses (S22). One municipal officer (Q27) explains his  
14 419 score telling that communities must be trained to be efficient. The physical planning perspective,  
15 420 however, is well grounded in local socio-economic and environmental realities. These distinct  
16 421 characteristics rely upon several significantly different claims: that devastating calamities did exist  
17 422 30 year ago; that improving living conditions is essential in order to address climate risks; and  
18 423 that plans should be initiated at the *barangay* level but are useless if they are not coordinated  
19 424 with higher government levels (S05, S15, and S28).  
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## 24 425 5. Discussion

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26 427 Actors' viewpoints on climate change adaptation and planning practices are held across four  
27 428 empirically determined social perspectives. These perspectives present a high shared meaning,  
28 429 which was illustrated by the positive and relatively high correlation between factors scores. This  
29 430 is an evidence of major commonalities between perspectives that reflect a common interest or  
30 431 culture-wide understanding among actors from the field of development planning regarding  
31 432 climate change adaptation in the Philippines. The four social perspectives hold a common  
32 433 agreement upon the idea that climate change is a reality impacting many different sectors that  
33 434 should be addressed pro-actively (see consensus statements 9, 11 and 24). Besides,  
34 435 development planning is an activity positively valued within each social perspective. In particular,  
35 436 participatory approaches with multiple actors are supported among all perspectives for  
36 437 implementing inclusive planning practices (S27 and S23). In this regard, results are consistent  
37 438 with the observation of Few et al. (2007) that discourses of inclusive governance advocating  
38 439 participation are widespread among actors involved in climate change adaptation.  
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42 441 Yet, results also suggest more complexity in implementing adaptation strategies than  
43 442 commonalities among perspectives first indicate. Along with Pelling's (2011) observation about  
44 443 the existence of multiple actors' viewpoints on how to adapt, the four social perspectives  
45 444 identified provide evidence that actors from the field of development planning in the Philippines  
46 445 do hold divergent viewpoints when it comes to frame climate change adaptation and prioritize  
47 446 planning activities. While addressing climate change and building inclusive planning practices is  
48 447 commonly valued as a desired *end*, differences between perspectives emerge when considering  
49 448 the *means* of implementing adaptation processes through planning practices. In particular,  
50 449 perspectives present major differences regarding how multiple actors should be involved in  
51 450 planning activities. This can best be exemplified by differences among the physical planning and  
52 451 grassroots perspectives.  
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56 453 Although the physical planning perspective acknowledges the importance of participatory  
57 454 approaches, it holds a critical attitude towards community's adaptive capacity by supporting the  
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3 455 idea that individual actors cannot address climate risks without being trained and prepared to be  
4 456 efficient. By contrast, the grassroots perspective does not consider governments as essential for  
5 457 enacting adaptation. In terms of disaster responses for instance, this perspective promotes  
6 458 adaptive strategies that build upon community's role and the "*Bayanihan* system" (i.e. a Filipino  
7 459 expression designing a spirit or attitude of communal unity to achieve a particular objective).  
8 460 Such a differing prioritization regarding the role of community and government actors in planning  
9 461 practices thus provide evidence that divergent adaptation strategies may emerge among actors  
10 462 from the field of development planning.  
11 463

12 464 These findings contribute characterizing how development planning can guide adaptation  
13 465 thinking in at least two ways. First, results highlight that the four social perspectives identified  
14 466 among development actors in the Philippines support differently the two main forms of adaptation  
15 467 (planned and autonomous) commonly identified in the climate change literature (Agard et al.,  
16 468 2014; Hedger et al., 2011). The grassroots perspective supports autonomous adaptation and the  
17 469 physical planning perspective highly supports planned adaptation. Yet, the institutional  
18 470 perspective only advocates for planned adaptation to a lesser extent, and the development  
19 471 perspective supports both planned and autonomous adaptation strategies. In order to strengthen  
20 472 adaptive capacity, this suggests it is also essential to appraise development planning not only as  
21 473 a two-way process where planned and autonomous forms of adaptation may compete as  
22 474 divergent adaptation strategies, but also as a process driven by actors that combine those two  
23 475 approaches to adaptation in creative ways.  
24 476

25 477 Second, each social perspective offers an essential starting point to foster the development of  
26 478 adaptation strategies involving multiple actors across scales. Although Resurreccion et al. (2008)  
27 479 pointed a mismatch between national and local level realities in the Philippines, results suggest  
28 480 shared viewpoints exist among actors from multiple levels of the planning hierarchy. The social  
29 481 perspectives identified both divide organisations and cut across boundaries between  
30 482 organisational structures: each of the four social perspectives identified comprises actors from  
31 483 both government agencies and civil society organisations at the national and local level. An  
32 484 actor's structural position thus should not be considered as a single predictor of any form of  
33 485 adaptation (neither planned nor autonomous). On the contrary, this suggests that development  
34 486 planning has the capacity to develop processes that incorporate *a priori* distant levels of  
35 487 individual and organisational actors.  
36 488

37 489 Finally, while focusing on governments and civil society organisations among the formal planning  
38 490 system in the Philippines proved being useful for investigating how development planning can  
39 491 strengthen adaptive capacities, this research further highlights the need to expand the analysis  
40 492 on actors from the informal domain. These may include actors from informal settlements or the  
41 493 most vulnerable communities and households non-represented by formal civil society  
42 494 organisations. Understanding their viewpoints and see how much these may relate to the four  
43 495 perspectives extracted within this study would help better understand the extent to which the  
44 496 adaptation strategies valued by formal actors may be accepted and effectively implemented  
45 497 among these populations. In this regard, the continued use of Q-method is supported as a useful  
46 498 qualitative and quantitative research technique allowing the engagement of multiple types of  
47 499 actors in novel ways.  
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## 6. Conclusion

This paper aimed at capturing multiple social perspectives on climate change adaptation and planning practices across the organisational hierarchy of planning in the Philippines, and examined whether commonalities and differences among these perspectives may lead towards divergent or convergent adaptation strategies. Four empirically significant social perspectives were determined – institutional, grassroots, developmental, and physical planning – using Q-method, an intensive and quantitative technique. Major differences and commonalities between perspectives were highlighted, in addition to actors' arguments used to justify claims. These social perspectives are characterized by several distinctive stances regarding climate change adaptation and planning practices in the Philippines.

First, the institutional perspective values the role of government institutions for mainstreaming climate change adaptation into local development planning. Second, the grassroots perspective gives more prominence to environmental protection and the need for meeting basic needs, along with a self-reliant attitude towards disaster risks. Third, the developmental perspective advocates for the role of individuals and local community actors in planning practices. Fourth, the physical planning perspective values the importance of spatial planning measures (including building hazard mitigating infrastructures and land use zoning) and emphasizes the need for urgent, technical responses to current climate change impacts.

Results contribute filling a knowledge gap in the literature on the need to develop approaches that can guide adaptation thinking in development planning. They first provide evidence that differentiated viewpoints on climate change and planning practices may lead to divergent adaptation strategies (e.g. through a differing prioritization regarding the role of community and government actors). Yet, the four social perspectives identified also suggest that shared adaptations may emerge both among actors from multiple organizational structures and across the organisational hierarchy of planning.

In terms of policy and practice, this highlights the need for developing approaches that facilitate the inclusion of these multiple perspectives. In particular, development planning should continue to focus on building learning processes that bring around the table multiple actors with diverse values and worldviews for developing a common understanding on how to strengthen adaptive capacities. This calls for directing attention to negotiations and the creation of spaces for the emergence of cross-scale relationships and shared power between actors. More than accounting for the multiplicity of viewpoints, development planning requires creating participatory venues for negotiation and sharing decision-making through collaborative actions. One example is creating participatory planning mechanisms that ensure the inclusion of actors from all levels of the planning hierarchy, rather than solely relying upon scientific and government actors for instance. When accounting for cross-scales relationships among actors and creating new spaces of shared meaning and action, development planning becomes a promising candidate for strengthening adaptive capacities and delivering more effective responses to climate change.

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For Review Only

Table 1.: Respondent characteristics

Organisational and individual actor	n	Adaptation type		Location
		<i>National</i>	<i>Autonomous</i>	
<b>Government agency</b>	<b>20</b>			
National officer	2	X		Manila
Regional officer	2	X		Cebu city
Provincial officer	5	X		Bohol
Municipal officer	6	X		Bohol
Barangay officer	5	X	X	Bohol
<b>Civil society organisation</b>	<b>17</b>			
Social development NGO representative	5		X	Bohol
Environmental NGO representative	6		X	Bohol
People's Organization representative	6		X	Bohol
	<b>37</b>			

For Review Only

Table 2. Rotated factor loadings<sup>1</sup>

Q-sort	F1	F2	F3	F4
Q01: Provincial planning and development officer	0,876*	0,261	-0,122	-0,182
Q02: National climate change commission officer	0,844*	-0,128	-0,198	0,367
Q03: Provincial governance officer	0,723*	0,336	0,043	-0,125
Q04: Regional economic development officer	0,698*	-0,381	0,320	0,130
Q05: Regional planning and development officer	0,668*	0,184	-0,116	0,144
Q06: NGO representative	0,601*	0,209	0,155	-0,112
Q07: Provincial environment officer	0,545*	-0,131	0,090	0,089
Q08: Environmental NGO representative	0,447*	-0,292	0,287	0,426
Q09: People's Organization representative	-0,072	0,982*	-0,074	-0,071
Q10: Provincial civil society officer	-0,027	0,831*	-0,066	0,176
Q11: People's Organization representative	0,170	0,659*	0,064	0,071
Q12: People's Organization representative	0,291	0,618*	-0,132	0,042
Q13: Municipal Planning and Development Officer	-0,098	0,576*	0,116	0,055
Q14: NGO representative	0,428	0,559*	-0,014	0,115
Q15: Environmental NGO representative	0,566	0,484*	-0,071	-0,113
Q16: Environmental NGO representative	0,213	0,447*	0,503	-0,240
Q17: Environmental NGO representative	0,026	0,007	0,789*	0,121
Q18: Barangay Disaster Risk Reduction Management officer	-0,107	0,236	0,709*	0,053
Q19: Barangay Disaster Risk Reduction Management officer	0,275	-0,099	0,704*	-0,142
Q20: NGO representative	0,164	-0,36	0,703*	0,312
Q21: Municipal Planning and Development Officer	0,460	-0,113	0,668*	-0,207
Q22: Representative of Municipal Planning and Development Officers	0,298	0,158	0,483*	0,059
Q23: Environmental NGO representative	0,075	0,351	0,481*	-0,102
Q24: National disaster risk reduction management officer	0,355	-0,056	0,469*	-0,050
Q25: People's Organization representative	0,329	0,209	0,464*	-0,183
Q26: Municipal Disaster Risk Reduction Management officer	-0,122	0,044	-0,089	0,982*
Q27: Municipal Planning and Development Officer	0,137	0,095	0,074	0,629*
Q28: Barangay representative	0,115	0,223	0,111	0,616*

<sup>1</sup> Values grouped by defining sorts (\*) then sorted in decreasing order



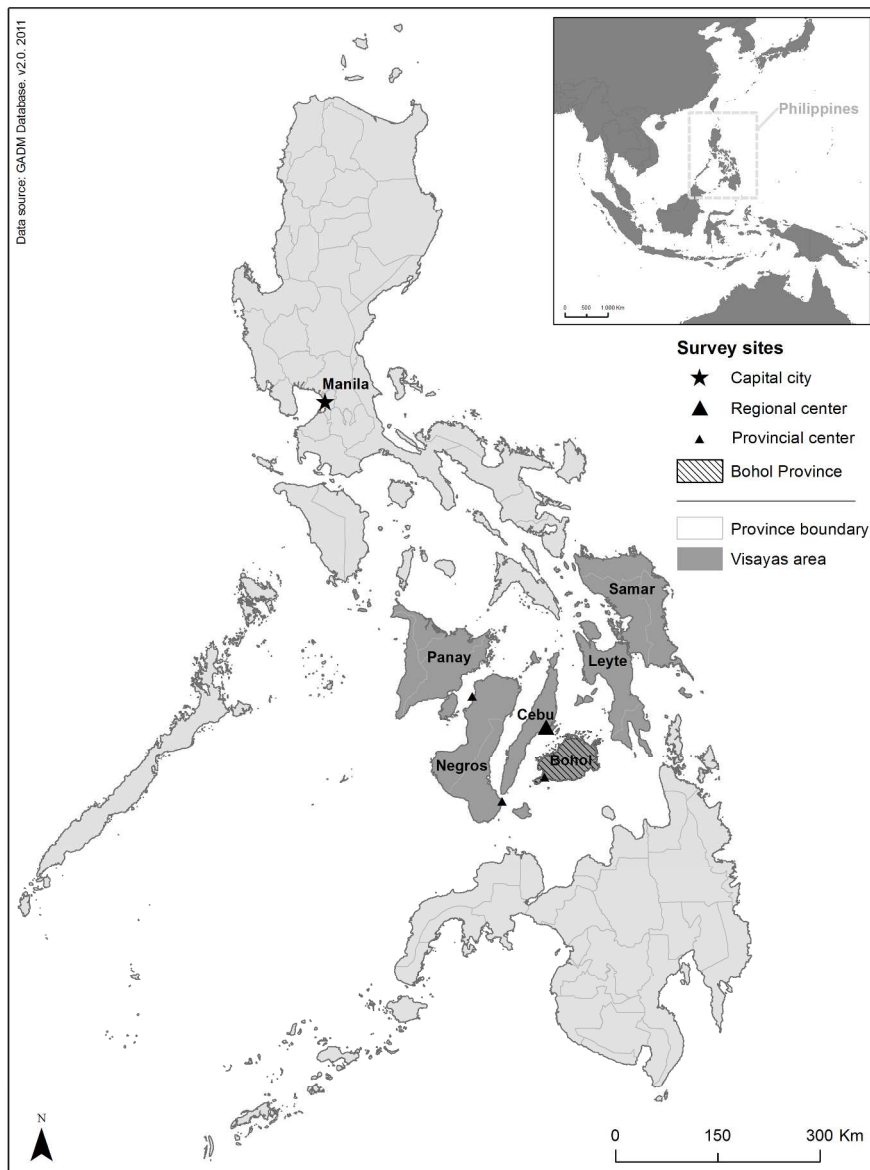
**Table 3.** Factor scores and rank statement scores for Q-sort statements

No	Statement	F1		F2		F3		F4	
		Z	Rank	Z	Rank	Z	Rank	Z	Rank
<i>Climate change perception</i>									
S01	Weather conditions are important in people's daily life	1,44	3	1,02	2	1,29	3	<b>0,16<sup>a</sup></b>	1
S02	Disasters are natural. We cannot go against nature	-0,60 <sup>d</sup>	-1	1,78 <sup>d</sup>	3	0,02	0	0,16	1
S03	Taking care of Mother Nature will prevent devastating calamities	1,12	2	1,76 <sup>d</sup>	3	0,77	1	0,16	1
S04	Start of the rainy and dry season has become unpredictable	1,09	2	0,28	1	1,14	2	0,10	-1
S05	Severe weather events and devastating calamities did not exist 30 years ago	-0,66 <sup>d</sup>	-1	-0,05 <sup>d</sup>	-1	-1,14	-2	-1,74	-2
S06	Our coastlines are being eroded because of climate change and sea level rise	0,20	0	-0,55 <sup>a</sup>	-1	0,55	1	0,13	0
S07	The idea of climate change is just a buzz word from national agencies and international institutions	-1,81	-3	-1,76	-3	-1,73	-3	<b>0,77<sup>a</sup></b>	1
S08	People observed changes in the seasons before scientists start talking about 'climate change'	0,76	1	-0,04	-1	0,56	1	0,13	0
S09	There is no clear evidence that the climate is changing in my area	-1,59 <sup>c</sup>	-3	-1,68 <sup>c</sup>	-3	-1,32 <sup>c</sup>	-3	-1,81 <sup>c</sup>	-3
S10	Climate change is a problem that only affects the poor	-2,31	-3	-1,06 <sup>a</sup>	-2	-1,95	-3	-1,84	-3
S11	Climate change leads to negative impacts in many different sectors such as water, agriculture, tourism, and health	1,02	2	1,58	3	1,03	2	1,00	2
S12	Climate change is not only a threat, it also brings positive benefits	0,81 <sup>d</sup>	1	<b>-1,65<sup>d</sup></b>	-2	-0,77 <sup>d</sup>	-1	0,00 <sup>d</sup>	-1
<i>Adaptation approach</i>									
S13	There are more urgent problems in my area than climate change	-0,33	-1	0,13	0	-0,64	-1	0,03	-1
S14	People will take measures against climate change only if they are directly badly affected	-0,38	-1	0,96 <sup>d</sup>	2	-1,01 <sup>d</sup>	-2	0,13	0
S15	Improving people's living conditions is the most important measure to take for facing climate change impacts	-0,54	-1	-0,77	-2	0,01 <sup>d</sup>	0	1,03 <sup>d</sup>	2
S16	Best responses to climate change are the ones answering a demand from local citizens	-0,17 <sup>c</sup>	0	-0,55 <sup>c</sup>	-1	-0,35 <sup>c</sup>	-1	-0,81 <sup>c</sup>	-2
S17	Adapting to climate change means only preparing for more natural disasters such as floods, storms, landslides, and typhoons	-1,51	-2	1,48 <sup>d</sup>	3	0,36 <sup>d</sup>	0	-0,94	-2
S18	Planting trees to reduce carbon dioxide (CO2) emissions is more important than learning how to face disasters	-0,20	-1	-0,71	-1	-0,90	-2	0,03	-1
S19	Barangays should conduct trainings to explain people what to do to avoid adverse effects of climate change	1,23	3	<b>0,21<sup>a</sup></b>	1	1,38	3	1,06	3
S20	NGOs play a better role than Government institutions to build the capacity of local communities because they work closer to the people	<b>-1,07<sup>a</sup></b>	-2	-0,02	-1	-0,27	0	0,03	-1
S21	Community-based projects from NGOs are difficult to sustain. Benefits for the community are often limited in time	0,45	1	0,88	1	-0,80 <sup>d</sup>	-1	0,06	-1
S22	Community response to calamities is faster and more efficient than LGU responses	-0,08	0	0,14	0	-0,77	-1	-0,84	-2
S23	People should participate to disaster preparedness activities, this is their duty as citizens	1,22	3	0,93	2	1,43	3	0,16 <sup>d</sup>	1
S24	The 'Bahala Na' attitude is a good way to face disasters	-1,85 <sup>c</sup>	-3	-1,88 <sup>c</sup>	-3	-2,22 <sup>c</sup>	-3	-1,78 <sup>c</sup>	-3
<i>Planning practices</i>									
S25	Local citizens don't know about the challenge of climate change, this is why national policies must be implemented at the local level	0,71	1	0,18	1	-0,43	-1	0,13	0
S26	Formulating and implementing plans reduces the risks from climate change	0,64	1	0,20	1	<b>1,26<sup>a</sup></b>	2	0,13	0
S27	LGUs should encourage more local community participation in the crafting of their plans	1,58	3	0,95	2	1,31	3	1,06	3
S28	A Barangay Disaster Risk Management plan is useless if it is not coordinated with plans from higher government units	-0,14	0	0,12	0	0,62	1	1,06	3
S29	Asking local people about past severe weather events they recall is essential for responding to potential future calamities	0,75	1	0,16 <sup>a</sup>	0	0,82	2	1,00	2
S30	Maps of hazardous areas should be made by local people, not by external consultants or experts who don't know the area	-0,26	-1	-2,18 <sup>d</sup>	-3	0,43	0	0,16	1
S31	Local communities can identify flood zones with great accuracy	0,02	0	0,16	0	0,66 <sup>a</sup>	1	0,03	-1
S32	Land use measure like zoning will prevent from natural hazards	0,06	0	0,11	0	0,01	0	<b>1,03<sup>a</sup></b>	2
S33	Planting mangroves is the best natural defence against storms	0,90	2	0,92	1	0,32 <sup>d</sup>	0	1,90 <sup>d</sup>	3
S34	Forests should be preserved and more trees should be planted to avoid landslides	1,04	2	1,02	2	0,77	1	0,16	1
S35	Building dikes and sea walls to avoid floods is not a long-term solution	0,32	0	0,06	0	0,81 <sup>d</sup>	1	-1,68 <sup>d</sup>	-2
S36	People would be less affected by heavy rains if we had appropriate drainage and sewerage systems	0,38	0	0,06	0	0,47	0	1,10	3
S37	Our road infrastructures (roads, bridges) are strong enough to face climate change impacts	-0,70	-2	-0,79	-2	-1,15	-2	<b>-2,65<sup>a</sup></b>	-3
S38	The best option to avoid flooding is relocating residents	-1,07	-2	0,00 <sup>d</sup>	0	-0,96	-2	0,97 <sup>d</sup>	1
S39	Relocating residents from risk prone coastal areas to upland areas is not viable because they will lose their livelihood	-1,15	-2	-0,80	-2	-0,72	-1	<b>0,13<sup>a</sup></b>	0
S40	People build houses in risk-prone areas because laws and building codes are not strictly enforced	0,69	1	-0,58 <sup>d</sup>	-1	1,09	2	0,13	0

*a* = distinguishing statement of factor i only; *d* = distinguishing statement of one factor or more; *c* = consensus statement

Note: Differences between pairs have a minimum significance at the 0,05 level. Statement loadings with differences between all pairs significant at the 0,01 level are labelled in bold.

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