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2 Gender and Social Capital: The Importance of Gender Differences for the Maturity and Effectiveness of Natural Resource Management Groups

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Summary. — This paper seeks to contribute to an improved understanding of the gender aspects of social capital manifested in groups for natural resource management (NRM). We investigated how gender differentiated social groups differ in their activities and outcomes for NRM. A total of 46 men's, mixed, and women's groups were analyzed in 33 rural programs in 20 countries of Latin America, Africa, and Asia. Significant gender differences were found in relation to group maturity and NRM achievements and approaches as well as important differences in experiences of collaboration and capacity to manage conflict. Overall, we found that collaboration, solidarity, and conflict resolution all increase in groups where women are present. In addition, norms of reciprocity are more likely to operate in women's and mixed groups. Similarly, the capacity for self-sustaining collective action increased with women's presence and was significantly higher in the women's groups. The results demonstrate the importance of gender analysis for collective NRM and particularly the role of women for collaboration in and sustainability of NRM groups.

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Key words — collective action, gender, social capital, natural resource management

27

1. INTRODUCTION

29 It is increasingly well established that social
30 capital is an important factor in building and
31 maintaining collective action (Krishna & Uph-
32 off, 1998; Pretty, 2003; Pretty & Ward, 2001;
33 Putnam, Leonardi, & Nanetti, 1993; Scoones,
34 1998; Woolcock, 1998), which is in turn funda-
35 mental to substantial and long-term changes in
36 natural resource management (NRM) (Agra-
37 wal & Gibson, 1999; Baland & Platteau, 1996;
38 Bromley, 1992; Korten, 1986; Ostrom, 1990;
39 Pretty, 2002; Pretty & Smith, 2004; Reddy,
40 2000; Steins & Edwards, 1999; Wade, 1987).
41 Analysis of causal relationships among

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42 improved resource management and collective
 43 action has hitherto centered on the existence
 44 or creation of appropriate institutional and
 45 property arrangements (Bromley, 1992; Leach,
 46 Mearns, & Scoones, 1999; Olson, 1965; Os-
 47 trom, 1990), but there is an emerging recogni-
 48 tion that relations of trust and common
 49 values are important to collective action (Har-
 50 ris & Renzo, 1997; Lyon, 2000; Pretty & Ward,
 51 2001; Uphoff, 2000). Particular attention has
 52 been given to the concept of social capital,
 53 broadly understood as a social resource "upon
 54 which people draw when pursuing different
 55 livelihood strategies requiring coordination
 56 and collective action" (Scoones, 1998, p. 8).
 57 However, as Krishna (2000) concludes in an
 58 analysis of the implications of differences in so-
 59 cial capital, little is known about how to tailor
 60 programs to building social capital based on
 61 such differences. In this paper, we argue that
 62 the role of gender differences may be of partic-
 63 ular importance to understand and create social
 64 capital in order to sustain NRM groups.
 65 Although the gender dimensions of NRM have
 66 been identified as key factors shaping peoples
 67 access to and use of natural resources (Agraw-
 68 wal, 2000; Cleaver, 1998a; Poats, 2000), most
 69 discussion of social capital so far appears to
 70 have been almost gender blind (Molyneux,
 71 2002) or even critical toward women's role in
 72 the formation and maintenance of social capital
 73 (Riddell, Wilson, & Baron, 2001). Conse-
 74 quently, analysis of gender biases of social cap-
 75 ital, understood as collective action that
 76 (re)produces gender discrimination, that is,
 77 reinforces male dominated power structures
 78 and excludes women from participation and
 79 decision making, is also almost nonexistent.
 80 Thus, the hypothesis that gender influences
 81 NRM through different, gender-related stocks
 82 and usages of social capital requires further
 83 examination and empirical testing.

84 Classifying social capital as "institutional,"
 85 based on transactions governed by roles, rules,
 86 procedures, and organizations or as "rela-
 87 tional," and so governed by norms, values, atti-
 88 tudes, and beliefs, suggests that different
 89 strategies are needed for building social capital
 90 to support collective action for NRM. Krishna
 91 (2000, p. 79) indicates that in situations where
 92 relational social capital is strong but institu-
 93 tional capital is weak, collective action inter-
 94 ventions will need to introduce rules,
 95 procedures, and skills to build institutional cap-
 96 ital on a relational capital base. Conversely,
 97 where rules, procedures, roles, and organiza-

tions are in place to support collective action, 98
 but mutual trust is low and little value is placed 99
 on collaboration, interventions will need to 100
 build trust and willingness to work together, 101
 and create relational social capital (Krishna, 102
 2000, pp. 80–88). In this paper, we conclude 103
 that the distinction between relational and 104
 institutional social capital is highly pertinent 105
 to understanding the implications of gender dif- 106
 ferences. Thus, neglect of the gender dimen- 107
 sions of social capital might lead to 108
 misleading conclusions about optimal interven- 109
 tion strategies. We investigate the different pro- 110
 cesses and outcomes in 46 men's, mixed, and 111
 women's groups in 33 rural programs in 20 112
 countries of Latin America, Africa, and Asia. 113

2. GENDER, SOCIAL CAPITAL, AND 114 THE ENVIRONMENT

Discussion on the gender aspects of develop- 116
 ment and environment has its origins in the the- 117
 ories of Women, Environment, and 118
 Development (WED), which highlight women 119
 as having a special relationship with the envi- 120
 ronment due to their responsibilities for the 121
 family and concern for the well being of future 122
 generations (Jackson, 1993; Manion, 2002; 123
 Martine & Villarreal, 1997). In this approach, 124
 women are seen as "a transcultural and trans- 125
 historical category of humanity with an inher- 126
 ent closeness to nature" (Jackson, 1998, p. 127
 314) and thus likely to be the principal manag- 128
 ers of the environment at local level (Green, 129
 Jokes, & Leach, 1998). 130

A number of alternative perspectives have 131
 also emerged that are less biologically deter- 132
 minist about women's roles in development 133
 and environmental management. These include 134
 gender analysis (Jackson, 1993), feminist polit- 135
 ical ecology (Rocheleau, 1995), feminist envi- 136
 ronmentalist (Agrawal, 1992), and the 137
 micropolitical economy of gendered resource 138
 use (Leach, 1991). All support the argument 139
 that gender differences in NRM are not due 140
 to women's inherent closeness to nature but 141
 due to "...dynamic and complex gender identi- 142
 ties in which men and women experience both 143
 shared and divided interests" (Jackson, 1998, 144
 p. 315). According to these authors, gender dif- 145
 ferences in environmental relations and man- 146
 agement should be understood as, and 147
 equated with, social relations. 148

Gender differences in needs and endowments 149
 may be key determinants of ways in which men 150

151 and women manage natural resources. The
 152 relationship between women and nature is fre-
 153 quently analyzed in terms of the increasing
 154 dependency on natural resources poor rural
 155 women experience due to poverty. In what
 156 has been termed the feminization of poverty,
 157 women have been identified as often carrying
 158 the main burden of poverty due to the overrep-
 159 resentation of female-headed households
 160 among the poor who depend more on common
 161 pool resources (Jackson, 1993; Martine & Vil-
 162 larreal, 1997). Simultaneously, it has been
 163 claimed that the household division of labor
 164 and women's responsibility for family provision
 165 of household resources such as water and fuel
 166 wood makes women both more dependent on
 167 common property or open access to natural re-
 168 sources and at the same time more vulnerable
 169 to the negative effects on rural livelihoods of re-
 170 source degradation (Manion, 2002).

171 Despite the case for viewing gender differ-
 172 ences and gender relations as influential in
 173 NRM decisions, gender has been largely absent
 174 from efforts made to define social capital
 175 (Molyneux, 2002; Riddell *et al.*, 2001). How-
 176 ever, several studies have found that men and
 177 women may have different kinds and qualities
 178 of social capital based on differences in their so-
 179 cial networks, values of collaboration, levels of
 180 conflict and capacity for conflict management.
 181 With respect to social networks, a number of
 182 researchers have found that women often de-
 183 pend more on informal relations and so form
 184 stronger kinship and friendship relations than
 185 men, who tend to rely more on formal relation-
 186 ships (Agrawal, 2000; Molyneux, 2002; More,
 187 1990; Riddell *et al.*, 2001). However, structural
 188 variables (such as number of children, marital
 189 status, age, employment status, income and
 190 occupation) can be more important for explain-
 191 ing differences in their social networks than
 192 gender (More, 1990).

193 Molinas (1998) found that successful collec-
 194 tive action is dependent on the degree of wo-
 195 men's participation. This is consistent with the
 196 argument that women exhibit more cooperative
 197 behavior than men due to greater interdepend-
 198 ency and altruism (Folbre, 1994; Sharma,
 199 1980; White, 1992). However, Jackson (1993)
 200 emphasizes that the assumption of women's
 201 greater altruism is evidence of a common fail-
 202 ure to scrutinize the private interest of women
 203 adequately. Women cannot be seen as a uni-
 204 form category but a diverse group of people
 205 who vary according to class and culture as well
 206 as resource endowments and decision-making

power both between and within households. 207
 Molyneux (2002) also criticizes the assumption 208
 that women are more altruistic for not ques- 209
 tioning the power relations that limit women's 210
 participation in formal organizations and so 211
 cause women more to rely on informal net- 212
 works. Hence, the "naturalization" of women's 213
 cooperative behavior could be abused by tar- 214
 geting women for voluntary "unpaid" work. 215

Agrawal (2000, p. 292) on the other hand, 216
 without rejecting possible gender differences in 217
 informal relationships and altruism, finds that 218
 the key to understand such gender differenti- 219
 ated social capital has to be found in the depen- 220
 dency of social networks and value of 221
 collaboration as the gender division of labor of- 222
 ten obliges women to work in groups. She sug- 223
 gests that 224

"...women have a greater need to build up social 225
 capital through localized networks, since women's 226
 avenues for accumulating economic resources and 227
 their physical mobility is typically more restricted 228
 than men's. They also have a greater need to sustain 229
 these networks, given their fewer exit option and les- 230
 ser intra-household bargaining power." 231

Gender differences in conflictiveness and 232
 capacity to resolve conflicts may also reflect 233
 power relations that make women more vulner- 234
 able than men to the negative effects of conflict. 235
 According to several authors (Agrawal, 2000; 236
 Cleaver, 1998a, 1998b; Moser & McIlwaine, 237
 1999), women are often more affected by con- 238
 flict because they are more dependent on infor- 239
 mal networks of collaboration. But Agrawal 240
 (2000) suggests that such interdependence helps 241
 to overcome social division and to facilitate 242
 conflict resolution. 243

In summary, gender relations have been iden- 244
 tified as important determinants of the capacity 245
 for collective action for NRM. Gender differ- 246
 ences in several aspects of social capital have 247
 also been identified or hypothesized, but these 248
 two strands of analysis in the literature have 249
 not been well integrated. Several important 250
 and unanswered questions have practical impli- 251
 cations for policy and program design. To what 252
 extent do women and men demonstrate differ- 253
 ent NRM outcomes based on collective action? 254
 Do women tend to build and use social capital 255
 more readily than men, and if so, is this associ- 256
 ated with gender differences in NRM? More- 257
 over, gender-differentiated social capital may 258
 not be inherently beneficial to NRM if social 259
 capital upholds or increases exclusion and dis- 260
 crimination. Thus, if gender-differentiated so- 261
 cial capital exists, is this due to innate gender- 262

263 related attributes, the poverty of most rural wo- 318
 264 men, or the underlying differences between men 319
 265 and women in power, influence over decision 320
 266 making, and control over assets? Thus, do
 267 NRM interventions relying on collective action
 268 for success need to include gender-differentiated
 269 strategies for building and using social capital?
 270 In this paper, we analyze the different and
 271 complementary roles of women and men in so-
 272 cial capital formation and its use, and explore
 273 the potential consequences of gender differences
 274 for NRM. We bring empirical evidence to bear
 275 on some aspects of the questions posed above.
 276 The analysis focuses on three broad proposi-
 277 tions about the characteristics of gender differ-
 278 ences in social capital:

(i) Women and men commonly depend on
 280 different kinds of social relations or net-
 281 works (Agrawal, 2000; More, 1990; Neuh-
 282 ouser, 1995). Women are often more
 283 dependent on informal networks based on
 284 everyday forms of collaboration such as col-
 285 lecting water, fetching fuel wood, and child
 286 rearing. Such informal networks provide
 287 solidarity and access to household resources
 288 like water and firewood. Men are often
 289 engaged in more formal networks, such as
 290 project groups and community councils that
 291 improve access to economic resources and
 292 decision making (or power) (Agrawal, 2000).

(ii) Women and men may value collabora-
 294 tion differently. Women often have more
 295 everyday experiences of informal collabora-
 296 tion based on reciprocal relationships and
 297 higher dependence on social relations for
 298 access to household resources (Agrawal,
 299 2000; Cleaver, 1998b). At the same time, it
 300 is often assumed that women reveal more
 301 relational and altruistic behavior due to
 302 their role and responsibility for reproduction
 303 (Folbre, 1994; Sharma, 1980; White, 1992),
 304 and are less motivated by selfish individual-
 305 ism (Molyneux, 2002), while men are more
 306 individualistic and more engaged in formal
 307 collaboration, decision making and orga-
 308 nized power structures.

(iii) Women are better able to overcome
 310 social division and conflicts (Agrawal,
 311 2000; Cleaver, 1998b; Moser & McIlwaine,
 312 1999), because of their greater interdepen-
 313 dency and their everyday experiences of col-
 314 laboration. As a consequence, women are
 315 expected to perform better in groups,
 316 and—also as a result of their greater depen-
 317 dency on natural resources due to the house-

hold division of labor—to achieve better 318
 outcomes from collective NRM (Agrawal, 319
 2000). 320

3. FRAMEWORK AND METHODOLOGY 322

Examination of the complex causal relation- 323
 ships between gender and collective NRM 324
 through different gender-related stocks and 325
 usage of social capital requires an innovative 326
 three-dimensional framework that combines 327
 elements of gender analysis, collective NRM, 328
 and social capital based on previous frame- 329
 works developed for environmental collective 330
 action (Agrawal, 2000; Krishna, 2000; Pretty 331
 & Frank, 2000; Pretty & Ward, 2001): The 332
 three dimensions employed for our analysis 333
 comprise 334

(1) The effects of gender on social capital 335
 based on the three propositions on gendered 336
 social capital described above that refer to 337
 social relations in networks, collaboration, 338
 and conflict management. 339

(2) The impact of gender on the effective- 340
 ness of collective action measured in terms 341
 of the maturity of groups (Pretty & Ward, 342
 2001). 343

(3) The effects of gender on the results of 344
 NRM measured in terms of a group's learn- 345
 ing approach to NRM (Pretty & Frank, 346
 2000). 347

Combining these three dimensions of the 348
 relationship between gender, collective action, 349
 and NRM, our analysis assesses five features 350
 of collective action in NRM groups: (i) collab- 351
 oration; (ii) social relations in networks; (iii) 352
 conflict management; (iv) group maturity; (v) 353
 impact on NRM. Each of these five variables 354
 is now defined in detail below. 355

(i) Collaboration—defined here in terms of 357
 five dimensions: frequency, value, purpose, 358
 type, and structure of collaboration. To 359
 examine the frequency by which group 360
 members collaborate, we examined (1) how 361
 often the groups get together for meetings 362
 or specific activities and (2) how often the 363
 group's members work together outside the 364
 group (by collaboration “among group 365
 members outside the group” we refer to sit- 366
 uations where two or more members of the 367
 group get together and collaborate on infor- 368
 mal basis on activities that are not necessar- 369
 ily related to the specific objectives of the 370
 group). To measure the value placed on col- 371
 laboration, we analyzed the dichotomy 372

373 between altruism and working for the com- 429
 374 mon good *vs.* selfishness and participation 430
 375 for personal benefit. This was measured 431
 376 through respondents' assessment of whether 432
 377 group members participated for the purpose 433
 378 of individual gains (such as resources and 434
 379 higher personal status) and/or whether their 435
 380 main motive of participation was a desire to 436
 381 contribute to group or community benefit. 437
 382 Because such judgment is naturally prone 438
 383 to bias, we have sought to revise the analysis 439
 384 through triangulation of similar issues. 440
 385 These include level of solidarity among 441
 386 group members in situations of emergency 442
 387 or need, as well as group members' specific 443
 388 incentives or purposes of collaboration 444
 389 including access to monetary resources or 445
 390 credit, access to agricultural inputs or land, 446
 391 access to decision making, access to collabo- 447
 392 ration and mutual help and opportunities to 448
 393 socialize (i.e., psychological benefit of 449
 394 belonging to a group). Based on the three 450
 395 propositions about gender differences in 451
 396 social capital discussed above, we would 452
 397 expect to observe higher values related to 453
 398 collaboration, and higher frequency of col- 454
 399 laboration in groups where women are pres- 455
 400 ent, and the highest levels of collaboration in 456
 401 women-only groups. 457

402 (ii) Social relations or networks—defined 458
 403 here as a set of people (or organizations or 459
 404 other social entities) connected by a set of 460
 405 social relationships (such as kinship, friend- 461
 406 ship, labor groups) that enable the flow of 462
 407 resources and information through them 463
 408 (Garton, Haythornthwaite, & Wellman, 464
 409 1997). We focus specifically on bonding con- 465
 410 nections (between individuals in the group) 466
 411 and less on bridging connections (horizontal 467
 412 between the group and other local groups) 468
 413 and linking connections (vertical connec- 469
 414 tions between the group and external organi- 470
 415 zations). To examine bonding connections, 471
 416 we analyzed in-group relationships among 472
 417 individuals dividing them into relational 473
 418 (family, friends, and neighbors), functional 474
 419 (cooperatives, community councils, and 475
 420 external projects), symbolic (ethnic, reli- 476
 421 gious, and political), and place-based rela- 477
 422 tionships (historical, and cultural 478
 423 attachment). 479

424 (iii) Conflict management—defined here 480
 425 according to the frequency of differences in 481
 426 groups that lead to conflict, and capacity 482
 427 to resolve disagreements. If gender differ- 483
 428 ences influence capacity to manage conflict 484

we should, according to the propositions 429
 on gender and social capital and women's 430
 capacity to overcome social division and 431
 conflict, expect to find fewer incidences of 432
 conflict and a higher capacity (from nonex- 433
 isting to very high) to resolve the existing 434
 ones among women's groups as compared 435
 to men's and mixed groups. This again 436
 should coincide with dependency on and 437
 values of collaboration previously measured 438
 in terms of frequency of collaboration as 439
 well as values of altruism and solidarity. 440
 (iv) Group maturity, here defined as NRM 441
 groups' "potential for self-defining and 442
 self-sustaining activity" (Pretty & Ward, 443
 2001, p. 209), has been operationalized in 444
 previous research into a series of criteria 445
 which can be found at three levels of devel- 446
 opment termed reactive dependence, realiza- 447
 tion independence, and awareness 448
 interdependence. We measure these stages 449
 of maturity on the basis of seven criteria: 450
 (1) group objectives in relation to NRM 451
 which reflect whether the group is reactive, 452
 regenerative or innovative; (2) the group's 453
 views on change (whether avoiding change, 454
 adjusting to change, or creating new oppor- 455
 tunities); (3) whether the group monitors 456
 and evaluates its own progress; (4) the 457
 degree of reliance on external facilitators to 458
 solve problems; (5) collective or individual 459
 planning and testing; (6) the importance of 460
 external aid for the formation of the group; 461
 and (7) resilience or likelihood of the group 462
 breaking up. Effectiveness or the potential 463
 for self-defining and self-sustaining activity 464
 is operationalized principally in terms of 465
 increasingly supportive values and attitudes 466
 toward self-organizing collective action. If 467
 there are gender differences in social capital 468
 that strengthens internal group relations, 469
 then we would expect group maturity to be 470
 positively related to the proportion of 471
 women in a group. 472
 (v) NRM impact is defined here in terms of 473
 the management and learning approach to 474
 NRM adopted by the groups. The three cat- 475
 egories used are (a) reactive (focused on eco- 476
 efficiency by reducing cost and environmen- 477
 tal harm); (b) regenerative (adoption of 478
 regenerative technologies and some princi- 479
 ples of sustainability); (c) redesign (innova- 480
 tion according to ecological principles, no 481
 longer adopting new technologies to fit the 482
 old system, but innovating to develop 483
 entirely new systems of management). The 484

three categories of NRM are indicators of the evolution of the capacity of a group to engage in a progressively more sophisticated learning process approach to NRM (Argyris & Schön, 1978), and is evinced by a progression along a continuum from remedial measures to changing current practice and ultimately to fundamental innovation (Pretty & Frank, 2000). NRM innovation in a collective action situation requires high levels of trust and networking to promote knowledge sharing and confidence in reciprocal support from the group in the face of risk. If there are gender differences in the stock and usage of social capital, and if these affect innovation in NRM, then we would expect to find that groups with a higher proportion of women have a higher probability of being at the innovation stage in the continuum of NRM.

We examined the NRM outcomes that groups achieved, providing respondents with 12 options from which they could select freely. These options were designed to show whether groups had adopted a reactive or regenerative learning approach to NRM. In this analysis, we could not include options for redesign, as these should be innovative beyond current knowledge. However, respondents had the possibility to describe such novelty in the "others" category of the questionnaire.

In total, we examined 46 different randomly selected groups (responses received from questionnaires conveyed to more than 500 NRM programs all over the world) related to 33 programs working on NRM in 20 countries of Latin America, Africa, and Asia (see Appendix A). All groups had at least three years of working experience, and the majority were small groups with less than 50 participants. The programs were drawn from databases on NRM from the CGIAR systemwide program on PRGA, the IDRC MINGA program, the World Bank, and the University of Essex (Pretty, Morison, & Hine, 2003). The groups were concerned with a variety of NRM issues, including agrobiodiversity, agroforestry, coastal resources, food crop production, integrated pest management, irrigation, soil management, and watershed and catchment management besides a number of programs that work on a variety of multipurpose activities with the objective to alleviate poverty through sustainable NRM. The groups represent all of the major categories of NRM groups identified by Pretty and Ward (2001) from eight countries

in Asia, eight in South America, and four in Africa.

The membership of six program's groups was solely men, eight were solely women, and 32 were mixed. We recognize the difficulties working with a category like "mixed groups," in which women's and men's respective degree of participation may vary considerably and in which the exact gender composition of the groups and position of the group members is not explicitly measured by the questionnaire. Thus the "mixed group" should be seen as a distinct category of group formation, creating different dynamics and providing unique opportunities for participation that are different from purely men's and women's groups. When compared with men-only and women-only groups, these mixed groups represent a phenomenon that allows us to investigate relationships between the presence of women (or men) in groups and overall group behavior/performance.

In all, the groups in the sample contained some 1,015 families, representing an average of 22 members per group. Despite the constraints of sample size, we were able to identify significant differences between some categories (maturity of groups, NRM achievements/approach, and homogeneity of groups) and trends in others (frequency of collaboration, solidarity, and capacity to manage conflicts).

These groups were surveyed using a questionnaire instrument containing 31 questions divided into the five themes mentioned above. These included (1) collaboration (characterization of the organization of the group, values of collaboration, and experience of collaboration outside the group); (2) social capital in networks (local, local-local and local-external connections); (3) capacity to overcome social division and conflict; (4) indicators of the maturity of the group; and (5) NRM achievements and approaches. The questionnaire was prepared for response by key informants who were external program facilitators (program directors or workers with e-mail access), and the answers are based on their assessment of types and levels of social capital in the groups and not on evidence of specific actions and relations as experienced by group members themselves. Reliance on a key informant assessment rather than a direct assessment by the people directly involved, that is, in our case, the members of the NRM groups, is a limitation of the data in particular when a subjective and qualitative assessment is involved. To moderate potential

598 biases, we have put emphasis in the analysis on
599 more tangible issues of social capital like fre-
600 quency of collaboration and number of connec-
601 tions that can easily and objectively be reported
602 by external observers. At the same time, we
603 have avoided going into some of the more
604 intangible aspects of social capital, such as trust
605 and reciprocity that would require an insider
606 perspective.

607 Another limitation of the study is the rela-
608 tively small size and varied composition of the
609 sample, which required careful selection of the
610 statistical methods applied and triangulation
611 of different measures. To analyze the data, we
612 used three different statistical methods to deter-
613 mine differences between the groups: (i) fre-
614 quency distributions of response for women's,
615 men's, and mixed groups; (ii) Fisher's exact test
616 of association between responses and type of
617 groups; and (iii) least significant different test
618 (LSD test) for women's, men's, and mixed
619 group's averages in cluster of responses.

620 In order to compare the frequency of re-
621 sponse for women's, men's, and mixed groups,
622 we have calculated and compared how often
623 women's, men's, or mixed groups, have chosen
624 a given option on the average. This analysis
625 was conducted for all responses. We used Fisher's
626 exact test to calculate whether the differ-
627 ences in frequency of response for women's,
628 men's, and mixed groups are significant. In
629 our case, Fisher's exact test shows significant
630 association when the value $Pr \leq P$ is equal
631 or less than 0.05 (95% level of confidence) or
632 when the $Pr \leq P$ is equal or less than 0.10
633 (90% level of confidence). To determine the dif-
634 ference among averages for cluster of re-
635 sponses, we use the least significant difference
636 test, as it is useful for the comparison of five
637 groups or less (we have three). To interpret
638 the results of the LSD test, the LSD value is
639 compared with the observed average differ-
640 ences. Means with the same t grouping letter
641 are not significantly different because their dif-
642 ferences are less than the LSD value. The
643 LSD test was used to analyzes clusters related
644 to maturity of groups, local connections, types
645 of collaboration outside the group, and NRM
646 achievements. Cluster analysis was carried out
647 to analyze the relationship between group com-
648 position (women only, men only, or mixed) and
649 group maturity. First, multiple correspondence
650 analysis was conducted of the seven variables
651 used to define group maturity to generate
652 scores for each group on dimensions that repre-
653 sent a combination of the proportion of the

shared variance, and then cluster analysis of 654
these scores was conducted using Ward's meth- 655
od (SPSS, 1994). 656

4. RESULTS FROM NRM GROUPS 657

(a) *Similarities between men's, mixed, and 658* *women's groups*

660 Despite the clear differences in these pro- 660
grams and their geographic locations, there 661
were many similarities among the groups. With 662
respect to motives for collaboration (altruistic 663
vs. selfish), no significant differences were de- 664
tected among men's, women's, or mixed 665
groups—a key aspect of relational social capital 666
and of the argument used by some early ecofe- 667
minists (Folbre, 1994; Sharma, 1980; White, 668
1992). We found that in around half of the 669
groups, group members came together for com- 670
mon good and community purpose mainly 671
(50% of the women's groups, 66.7% of the 672
men's groups, and 46.9% of the mixed groups), 673
while in approximately one-third of the groups, 674
the majority of group members were collabo- 675
rating because of the individual benefits such 676
as resources and status they could gain from 677
this. Moreover, 25% of the mixed groups and 678
12.5% of the women's groups had other reasons 679
for collaboration, emphasizing participation 680
for both selfish and altruistic reasons. This in- 681
cludes sharing of ideas and more sustainable 682
management of natural resources. 683

684 More surprisingly, we did not find any evi- 684
dence that women had stronger informal rela- 685
tions as indicated by kinship, friendship, and 686
neighborhood relations (20% for men's groups, 687
22.5% for women's groups, and 24.4% for 688
mixed groups), despite the well-documented re- 689
search on social networks that suggests the fact 690
that women have more informal and kinship re- 691
lated networks than men (Agrawal, 2000; 692
More, 1990; Neuhouser, 1995). In general, the 693
LSD test on group member's relationships did 694
not reveal any significant differences among 695
women, men, and mixed groups' local connec- 696
tions (relational, functional, symbolic, and 697
place-based relations) except for the functional 698
category where men had a significant higher 699
score than both the women's and mixed groups. 700
However, it is worth noting that the principal 701
relationship for all three groups is place based, 702
which is consistent with the relatively high level 703
of altruism and orientation toward the commu- 704
nity by the majority of the groups. At the same 705

706 time, all groups reported a very high level of
707 cohesion with little likelihood of breakdown
708 even after initial objectives had been fulfilled.

709 (b) *Gender differences in collaboration
and solidarity*

712 Although we found no gender differences in
713 the value placed on altruism, the analysis of
714 collaboration identified some gender differences
715 in collaborative behavior. Comparing fre-
716 quency of collaboration, women's groups tend
717 to meet more often than men's and mixed
718 groups (Figure 1). Half of the women's groups
meet on an average 1–2 times a week, much

719 more frequently than the others: 83.3% of the
720 men's groups and 71.9% of the mixed groups
721 meet at most bimonthly. Women's groups also
722 collaborate more frequently outside the group
723 (Figure 2). Members of half of the women's
724 groups collaborate on an everyday basis or 1–
725 2 times a week, where only 16.7% do so in
726 men's and 31.3% in mixed groups. Members
727 of half of the men's groups collaborate outside
728 only 1–2 times a year.

729 One explanation for the greater frequency of
730 interaction by the women's NRM groups is re-
731 vealed by analysis of group members' principal
732 activities for collaboration outside the group
733 (Table 1). Women's groups collaborate more

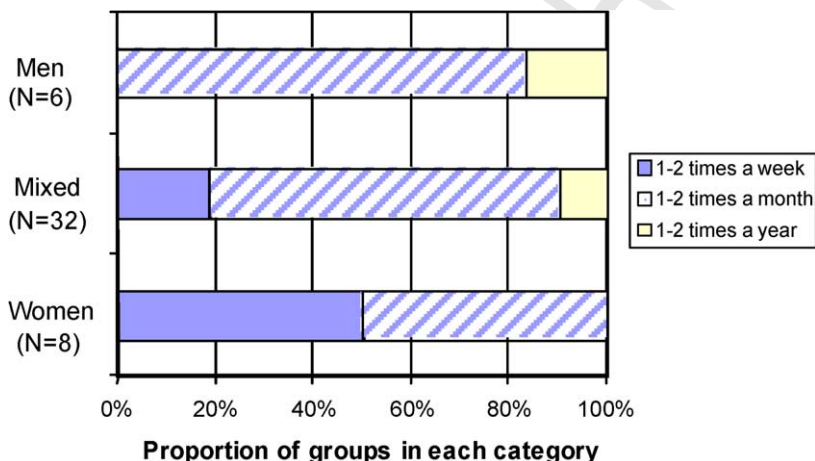


Figure 1. Meeting rate for men's, mixed, and women's groups.

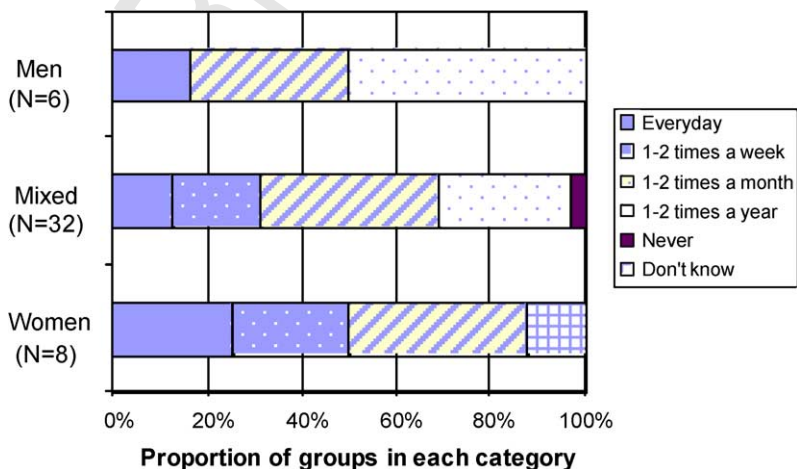


Figure 2. Frequency of collaboration outside the group.

Table 1. *Types of collaboration beyond specific group activities^a*

Type of external collaboration	Men's (N = 6)	Mixed (N = 32)	Women's (N = 8)
Natural resource management (%)	8.3	9.4	0
Household (%)	0	0	31.3
Agriculture (%)	11.1	25.0	20.8
Community infrastructure (%)	33.3	18.7	8.3
Community organization (%)	9.8	7.0	3.1

^a Least significant differences test for cluster of responses.

734 on everyday household activities like cooking
735 and child rearing than both men and mixed
736 groups. In contrast, men's groups work to-
737 gether on less frequent activities like community
738 infrastructure projects as well as in community
739 boards and in externally facilitated projects.
740 There is no significant difference among the
741 group members' collaboration outside the
742 group over agricultural activities (sowing, weed-
743 ing, and harvesting) and NRM (fetching fuel
744 wood and collecting water). The main purpose
745 of the group for collaboration is to also provide
746 some insight into why women's groups meet
747 more frequently. Access to monetary inputs or
748 credit is the main purpose for meeting for the
749 women groups and tends to be more important
750 to women's groups than to men's groups only or
751 mixed groups (31.3% compared with 16.7% for
752 men's groups and 15.3% for mixed groups)
753 compared with other motivations for collabora-
754 tion. Credit tends to require a high level of mon-
755 itoring and turn-around.

756 Finally, solidarity tends to increase in groups
757 where women are present. A majority of all
758 types of groups report that they always or usu-
759 ally help fellow members in case of emergency,
760 but mixed and women's groups report more soli-
761 darity compared to the men's groups: 90.7% of
762 mixed groups and 87.5% of women's groups say
763 they always or usually help fellow group mem-
764 bers in case of emergency or need, while 66.7%
765 of men's groups indicate that they do this.

766 In summary, frequency of collaboration in-
767 side and outside the NRM group as well as soli-
768 darity is higher in groups including women,
769 and this is mainly associated with collaboration
770 in gender-specific tasks, responsibilities, and
771 needs. Our findings do not suggest that collabora-
772 tion among women is related to the special
773 value they place on altruism.

774 (c) *Gender differences and conflict*

775 Fisher's exact test of the differences among the
776 group shows a significantly higher homogeneity

777 among members of women's groups than men's
778 and mixed groups (37.5% of the women's groups
779 claim not to have significant differences among
780 group members, while the figures for the men's
781 groups and mixed groups are respectively, 0%
782 and 6.3%). On the other hand, our results show
783 no gender differences in the incidence of conflict
784 (50% of both men's and women's groups have no
785 experience of serious conflict), but reported that
786 the capacity to manage conflict tends to be high-
787 er in women's groups. Overall, 73.9% of all
788 groups report having demonstrated capacity
789 (medium to very high) to overcome differences
790 and conflict, but where women are present,
791 groups tend to be better at managing conflict
792 (50% of the women's groups have high or very
793 high capacity to manage differences and conflict,
794 while only 33.3% of men's groups and 40.6% of
795 mixed groups do so) (Figure 3). However, these
796 results may be biased by the fact that the term
797 conflict and the severity of these could have been
798 interpreted in different ways in the question-
799 naire. Consequently, respondents may have gi-
800 ven their answers based on different
801 understandings of the term "conflict."

(d) *Gender differences in group maturity*

802 Group maturity refers to the effectiveness of
803 groups to sustain collective action, measured
804 according to seven criteria. Table 2 presents
805 the frequencies for men only, mixed, and wo-
806 men only groups on each of the seven criteria.
807 Overall, men's groups are at an early, realiza-
808 tion-independence stage of group maturity.
809 Women's groups, by contrast, have a strong
810 capacity for sustained collective action indi-
811 cated by the stage of awareness interdepen-
812 dence in group maturity. It is important to
813 note that maturity in this context does not refer
814 to or correlate with age or duration of the
815 group: our analysis also found that women's
816 groups have fewer years of experience (3.9
817 years) than both the men's (5.3 years) and the
818 mixed (5.7 years) groups. Table 2 shows that
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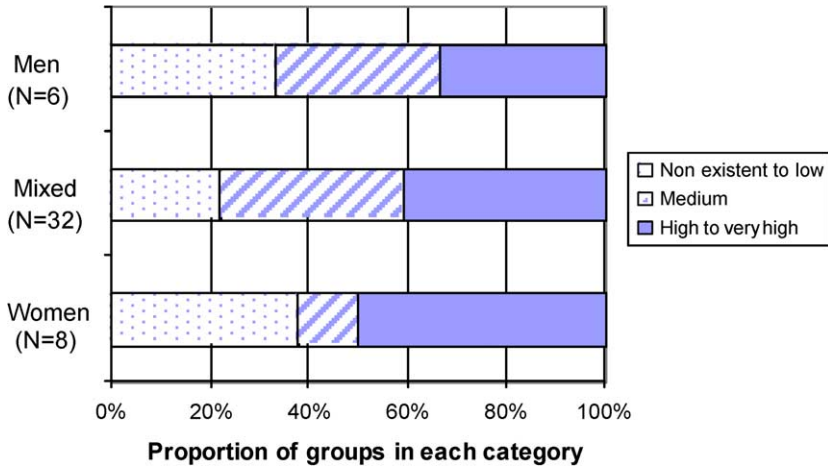


Figure 3. Group capacity to manage conflict.

820 women’s groups are more forward looking in
821 terms of NRM and appear to have less fear
822 of change. Women’s groups also conduct self-
823 analysis more regularly, which is consistent
824 with their generally more frequent rate of meet-
825 ings and collaborative actions. And finally, wom-
826 en’s groups more often organize on their own
827 behalf and with less external assistance than
828 both the men and the mixed groups.

829 The conclusion that the presence of women in
830 groups is likely to increase maturity or capacity
831 for self-defined and self-sustaining collective
832 activity on a long-term basis is supported by
833 the results of the cluster analysis shown in Fig-
834 ure 4. Multiple correspondence analysis was
835 carried out with two dimensions that are com-
836 posites of group type and the criteria in Table
837 2. Dimension 1 represents “collective capacity”
838 as it is a composite of four variables: indepen-
839 dence from external facilitators for problem
840 solving, engagement in group planning and
841 group testing, resilience, and women’s presence
842 in group composition. Collective capacity goes
843 down reading from left to right in Figure 4.
844 Dimension 2 is predominantly characterized
845 by the variable “group formation”: Thus,
846 groups formed because an external agency
847 asked them to do so cluster at the top as shown
848 in Figure 4; groups formed without external
849 agency cluster at the bottom. The most impor-
850 tant cluster identified is Cluster G1, which is
851 associated with groups formed without external
852 agency. Groups in this cluster have women
853 members, independence from external facilita-
854 tors; group planning as well as group testing;

and are considered unlikely to break down. This
cluster is characterized by the presence of wom-
en in the groups: it includes all except one of
the women-only groups and includes only one
of the men-only groups. Cluster G3 differs from
G1 in that its groups have been formed by exter-
nal agency, and includes the one remaining wom-
en-only group. Cluster G2 and Cluster G4
consist of most of the men-only groups and
are located mainly on the right-hand side of Fig-
ure 4, showing that collective capacity is lower
in these clusters which are characterized by reli-
ance on outsiders to solve problems as well as
individual planning or testing.

(e) Gender differences and NRM achievements

871 Gender differences were identified in the type
872 of NRM achievements reported by the groups.
873 Actual NRM achievements of the groups were
874 classified in terms of their relation to different
875 learning approaches—reactive and regenera-
876 tive. Women’s groups report a significantly
877 higher proportion of regenerative outcomes
878 than men’s groups. There is no significant dif-
879 ference among groups in their reactive achiev-
880 ements. This difference among women’s and
881 men’s groups is consistent with their responses
882 to the survey question designed to elicit which
883 NRM approach the group applies. These find-
884 ings support the assumption of Pretty and
885 Ward (2001) that NRM learning approach is
886 related to group maturity. We show that the
887 more mature women’s groups apply more

Table 2. *Proportion of men's, mixed, and women's groups measured according to seven criteria in each of three stages of maturity (stage 1: reactive dependent; stage 2: realization independent; stage 3: awareness interdependent)*

Seven criteria measured	Group type					
	Men		Mixed		Women	
	%	N	%	N	%	N
<i>Group objective</i>						
Stage 1: To conserve or restore a natural resource or resources to a previous status (the goal of the group is to restore what once was)	0	0	12.5	4	12.5	1
Stage 2: To adapt to a change in the status of a natural resource or resources (the goal of the group is to adjust to new realities)	66.7	4	46.9	15	12.5	1
Stage 3: To create new opportunities in managing a natural resource or resources (the goal of the group is to introduce something completely new)	33.3	2	40.6	13	75.0	6
<i>Views of change</i>						
Stage 1: The group is fearful of change, it is defensive	0	0	3.1	1	0	0
Stage 2: The group is adjusting to change, it is reactive	50.0	3	46.9	15	12.5	1
Stage 3: The group is creating new opportunities, it is proactive	50.0	3	50.0	16	87.5	7
<i>Self-analysis</i>						
Stage 1: The group has never evaluated its progress in meeting its objectives	16.7	1	0	0	0	0
Stage 2: The group sometimes evaluates its progress in meeting its objectives	66.7	4	59.4	19	25.0	2
Stage 3: The group regularly evaluates its progress in meeting its objectives	16.7	1	40.6	13	75.0	6
<i>Problem solving</i>						
Stage 1: Usually relies on help from outsiders to solve a problem	33.3	2	21.9	7	25.0	2
Stage 2: First tries to solve a problem itself before seeking help from outsiders	33.3	2	71.9	23	75.0	6
Stage 3: The group does not need outside facilitators to solve its problems	33.3	2	6.3	2	0	0
<i>Planning and testing</i>						
Stage 1: Individual planning and testing	16.7	1	12.5	4	0	0
Stage 2: Group planning and then individual testing	66.7	4	40.6	13	62.5	5
Stage 3: Group planning and group testing	16.7	1	46.9	15	37.5	3
<i>Group formation</i>						
Stage 1: Because an external agency asked it to	50.0	3	43.8	14	12.5	1
Stage 2: Because one or more of its members took the initiative and there was external agency support to help it form	33.3	2	43.8	14	50.0	4
Stage 3: Because one of more of the members took the initiative to form the group without external support	16.7	1	12.5	4	37.5	3

(continued next page)

Table 2—continued

Seven criteria measured	Group type					
	Men		Mixed		Women	
	%	N	%	N	%	N
<i>Resilience</i>						
Stage 1: It is possible that group breaks down before its goals are achieved	16.7	1	6.3	2	0	0
Stage 2: It is possible that the group breaks down after achievements of initial goals	0	0	21.9	7	28.6	2
Stage 3: It is unlikely that the group breaks down. The purpose of the group is redefined when initial goals are achieved	83.3	5	71.9	23	71.4	5

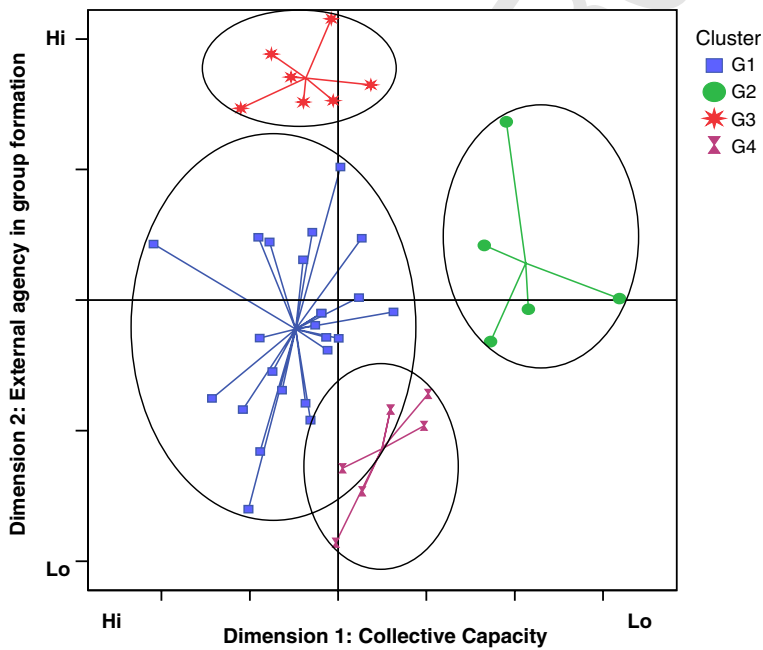


Figure 4. Cluster analysis of group maturity.

888 regenerative measures of NRM compared with
889 the less mature men's groups.

890 5. CONCLUSIONS AND POLICY
891 IMPLICATIONS

892 The analysis of different and complementary
893 roles of women and men in social capital forma-
894 tion and the potential consequences of such dif-
895 ferences for collective NRM in this study were
896 guided by the proposition that women tend to
897 build more relational social capital than men,

that is, informal social relations and networks 898
based on norms of collaboration and conflict 899
management. The reason for this, it is argued, 900
is that women supposedly value collaboration, 901
altruism, and conflict resolution more highly. 902
Gender differences in stocks and use of relational 903
social capital may translate into different NRM 904
outcomes because norms of reciprocity facilitate 905
collective management of natural resources by 906
providing trust. Trust and reciprocity among 907
actors at a personal and generalized level facili- 908
tate information exchange (and thus limit 909
transaction costs) and so collaboration needed 910

911 for collective action is enhanced. Collaboration
912 which values solidarity and generosity may al-
913 low access to resources and discourage stake-
914 holders from applying certain management
915 practices that would affect others negatively.
916 Women's relational social capital and values
917 which support solidarity with other women
918 may enable them to organize more effective col-
919 lective action than men.

920 Our analysis reveals mixed results in relation
921 to these propositions. On the one hand, propo-
922 sitions about the tendency of women to have
923 altruistic values and informal relationships that
924 endow them with higher social capital than men
925 are not supported by this study. In groups
926 formed for collective action in NRM, we did
927 not find significant gender differences in rela-
928 tional social capital in terms of the reported val-
929 ue placed on altruism and the extent of
930 informal kin relationships. On the other hand,
931 we did find gender differences in the frequency
932 of collaboration, solidarity, and capacity to
933 manage conflict where the data reveal an effect
934 on group behavior of the presence of women in
935 groups. We found that collaboration, solidarity
936 and conflict resolution all increase with wom-
937 en's presence in the groups, which is congru-
938 ent with *Molinas' (1998)* and *Odame's (2002)*
939 finding that women's participation increased
940 cooperation. Our findings suggest that norms
941 of reciprocity are more likely to operate in
942 groups where women are present and that this
943 may be the result of women's work responsibil-
944 ities that rely on frequent collaboration.

945 Similarly, the capacity for self-sustaining col-
946 lective action increased with women's presence
947 and was significantly higher in the women's
948 groups. The analysis demonstrated a significant
949 relationship between (a) maturity of groups and
950 gender and (b) NRM approaches/achievements
951 and gender characteristics of groups. This re-
952 sult supports the finding from another study
953 that maturity of groups is positively related to
954 performance and management of natural re-
955 sources (*Pretty, 2003; Pretty & Ward, 2001*).
956 At the same time, we would be cautious about
957 concluding that a more regenerative approach
958 to NRM found in women's groups compared
959 with men's more reactive approach is a direct
960 result of higher awareness of ecological princi-
961 ples. This situation more likely reflects women's
962 potentially higher dependency on common
963 property resources and their limited access to
964 external inputs.

965 The analysis provides clear evidence of the vi-
966 tal role of gender analysis for collective NRM

and points to the importance of diagnosing 967
gender differences in social capital in a commu- 968
nity or a group before intervention in order to 969
match the existing level of social capital with 970
the need to organize for specific collective activ- 971
ities. It does not make sense to assume that wom- 972
en will automatically possess a higher stock of 973
social capital than men. It will be important 974
to examine how different gender-related needs, 975
responsibilities, and endowments, and in partic- 976
ular the gender division of labor, affect commit- 977
ment to norms of reciprocity and collaboration. 978

979 However, we recommend careful analysis of
980 the potentials for the spillover effect of gen-
981 der-differentiated social capital in order to iden-
982 tify ways for taking advantage of the existing
983 levels of social capital to strengthen the organi-
984 zation of collective NRM. Such an analysis
985 must pay ample attention to the private interest
986 of women and should consider whether and
987 how collective action represents a resource
988 from which different types of classes of women
989 will benefit in different ways. Specifically, it will
990 be important not to exploit women's potential
991 for collective action to implement NRM pro-
992 jects that are not in their direct interest and to
993 avoid reinforcing the "dark side" of gender-
994 specific social capital, which may be exclusion-
995 ary and discriminatory. Women may depend
996 more on some forms of relational social capital
997 simply because they are excluded from male-
998 dominated formal networks and organized
999 power structures where institutional social cap-
1000 ital is built and exercised.

1001 Moreover, informal networks are needed to
1002 cope with multiple responsibilities for household
1003 provisioning, reproduction, childcare, and risk
1004 management. Women's capacity for organizing
1005 effective collective action may not be related to,
1006 or depend on gender differences in the values,
1007 attitudes, and informal relations that constitute
1008 relational social capital but on their opportunity
1009 for participation and even the sheer pressure of
1010 their workload. Based on the finding that mixed
1011 groups are an important type of organization
1012 where women's presence has an effect on group
1013 performance, we would rather suggest that
1014 attention should be exercised in forming and
1015 supporting mixed groups to ensure that women
1016 are given both a clear voice and decision-making
1017 power. In mixed groups, women and men are
1018 likely to have different needs, capabilities, and
1019 preferences, and to the extent that these differ-
1020 ences are respected the presence of women in
1021 mixed groups is likely to raise the level of matu-
1022 rity and solidarity in the groups and so improve

1023 NRM outcomes. This would imply that an
1024 important focus of gender-sensitive capacity
1025 building and interventions to promote collective
1026 action would be to ensure that there is appropri-
1027 ate opportunity for women to participate.

1028 Consequently, we recommend that interven-
1029 tions to promote collective action for NRM di-
1030 rectly address the gender composition of group
1031 organization, and in particular the groups' re-
1032 lational and institutional social capital, and any
1033 norms, rules, or networks that exclude women
1034 from participation and decision making. Such
1035 a recommendation necessarily implies readiness
1036 to challenge the structural positions from which
1037 women participate. To do so, it is critical to
1038 diagnose the power relations among men and
1039 women and comprehend their patterns of inter-
1040 dependence to be able to influence and facilitate
1041 gender relations and dynamics in collective ac-
1042 tion groups. Likewise, it is essential to assess
1043 the meaning of participation to women and
1044 men and understand better the dynamics and
1045 processes of how they draw on collective action
1046 resources in gender-differentiated groups.

1047 Further research could usefully examine
1048 these issues to flesh out the dynamics underly-
1049 ing our finding that the presence of women in
1050 NRM groups tends to increase their effective-
1051 ness. Based on our results, we suggest that
1052 understanding gender relations is important

1053 for the sustainability of groups and how they
1054 may improve NRM. Krishna's question about
1055 how to tailor programs to build collective ac-
1056 tion based on recognition of gender differences
1057 in social capital remains unanswered by our
1058 analysis. However, one implication of our find-
1059 ings is that in cases where women are high on
1060 relational social capital as our analysis re-
1061 vealed, but weak on institutional social capital,
1062 and where men have strong institutional social
1063 capital but are short of relational social capital,
1064 their capacity to organize effective group pro-
1065 cesses for collective action in NRM will vary.
1066 Gender differences in social capital imply that
1067 some form of intervention is required to con-
1068 struct institutional social capital in the form
1069 of enforceable rules, procedures, and sanctions
1070 that can be used by women, or alternatively
1071 that relational capital is built in the form of en-
1072 hanced to trust, norms of collaboration, and
1073 conflict management for men. Thus, we con-
1074 clude that capacity building and interventions
1075 to promote collective action for NRM need to
1076 be gender differentiated.

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APPENDIX A. PROGRAM INVENTORY

Agrobiodiversity

Strengthening the Scientific Basis for In Situ Agricultural Biodiversity Conservation on Farm Vietnam

Community based Biodiversity Development and Conservation of Indigenous Vegetables of Kenya through Sustainable Use Kenya

Incorporation of the Chain of Users of Potato in the Participatory Improvement Program Ecuador

Agroforestry

Conservation of Medicinal and Aromatic Plants for Sustainable Livelihood Nepal

Combining Ecological Knowledge and Socio-Economic Perspectives in the Participatory Improvement of Multistrata Agroforestry Systems at the Forest Margin Indonesia

Coastal resources

Programa Ecoplata: Apoyo a la Gestión Integrada de la Zona Costera Uruguaya del Río de la Plata Uruguay

la Marginalización de las Comunidades Costeras Mexico

Food crop production

Whole Family Training in Maize, Bangladesh

Local Committee for Agricultural Research (CIAL Spanish Acronym) Colombia

Accelerating Adoption of Zero Tillage in Rice–Wheat Systems in the Indo-Gangetic Plains Nepal and Pakistan

Risk Management Project Zimbabwe

Revaluation of Native Potato Varieties with Emphasis on Gender in High-Risk Climatic Zones in Ayllu Chullpas Bolivia

Linking the Formal and Informal Systems: Exploring the Potential for Crop Development and Biodiversity Enhancement China

Improved Irrigation and Productivity for Organic Aromatic Herbs Farmers in the Provinces of Sihuas y Peru

Pomabamba, Department of Ancash

Integrated Pest Management

Motivating Farmers to Reduce Insecticide Use Philippines and Vietnam

Integrated Management of Potato Pests: Refining and Implementing Local Strategies through Farmer Field Schools. The Case of San Miguel Peru

Desarrollo Agrícola de la Población Indígena de la Zona de Influencia de Mitú—Monfort (Vaupés): Control de Pudriciones en Yuca Mediante Investigación Participativa Colombia

Desarrollo Agrícola de la Población Indígena de la Zona de Influencia de Mitú—Monfort (Vaupés): Control de Pudriciones en Yuca Mediante Investigación Participativa Colombia

Irrigation

Farmer Managed Irrigated Agriculture in Sindh Province Pakistan

Multiple purpose

Sustainable Improvement of Marginal Lands in Lebanon: Aarsal, a Case Study Lebanon

Mainstreaming Marginalized and Disadvantaged Community through Gender and Developmental Activities in Morang District Nepal

Mainstreaming Marginalized and Disadvantaged Community through Gender and Developmental Activities in Morang District

(continued next page)

Appendix A—*continued*

Apoyo la Familias de Baja Renta de la Región Semi-Árida del Estado de Sergipe	Brazil
Participatory Rural Development Project	Nepal
Manejo de Recursos Naturales en la Sierra sur del Perú—MARENASS	Peru
Producción Sostenible de Flores de Anturios Como Alternativa de Diversificación, Conservación y Paz Para la Mujer Rural en el Municipio de Caldono Cauca	Colombia
Diseño e Implementación Participativos de un Prototipo de Reconversión de Fincas a la Producción Sostenible de Hortalizas en el Municipio de Cota, Cundinamarca	Colombia
Developing Effective Institutions for Sustainable Natural Resources Management in Deduru Oya River Basin	Sri Lanka
<i>Soils management</i>	
Integrated Soil Productivity Initiative through Research and Education	Uganda
Control de Erosión de la Micro-cuenca Toralapa Alta—Tercera Fase	Bolivia
Alternativas Para la Recuperación de Suelos Degradados en Zonas de Ladera del Departamento del Valle del Cauca	Colombia
<i>Watershed and Catchment Management</i>	
Mainstreaming of Gender Concerns in Village Panchayats	India
Participatory Innovation Development in Chivi	Southern Zimbabwe
Support Program for the Recovery of the San Roque Lake Watershed	Argentina
Regional Development Plan for the Chicamocha River Watershed	Colombia

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