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Psychological Outcomes of REDD+ Projects: Evidence from Country Case Studies

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Abstract

We apply self-determination theory (SDT) to explain how psychological outcomes on participants in ‘Reducing Emissions from Deforestation and Forest Degradation’ (REDD+) projects, can provide lessons for other forest landscape management programs. Evidence from REDD+ case studies suggests that negative outcomes may result from three design factors. Payment for environmental services (PES) may reduce participants’ motivation and competence in livelihood activities. A large-scale landscape approach to REDD+ increases stakeholder heterogeneity which may reduce participants’ ability to liaise and cooperate. Trade-offs between traditional forest uses and conservation goals may reduce participants’ autonomy to develop their livelihoods. By inference, replicating these design factors in comparable forest landscape management programs or projects may also result in similar negative outcomes. Replacing PES with additional – not substitute – livelihood-based capacity building and reducing the physical landscape to the social landscape which encompasses stakeholders’ capacity to work together may mitigate these outcomes.

29 Keywords: Self-determination theory; reducing emissions from deforestation and forest
30 degradation; psychosocial autonomy; locus of causality; payments for environmental services
31

32 1. Introduction

33

34 Psychosocial perspectives in forest conservation and restoration have recently been presented
35 in studies of disjuncts between traditional and modern institutions (Poudel 2017), symbolic
36 violence (Ojha 2009; Baynes et al. 2016) or actual violence (Howson 2018). These studies
37 reflect increasing interest in the social factors which affect biophysical outcomes. As a quasi-
38 social science experiment in which the livelihoods of participants were treated as variables
39 during project design (Korhonen-Kurki et al. 2016), REDD+ projects have recently begun to
40 provide valuable psychosocial case study evidence. Positive outcomes have been matched with
41 negatives such as forced family relocations (c.f. Vatn et al. 2017). REDD+ has even been
42 labelled as ‘ecological ransom’ (Howson 2018) or a tool for State ‘territorialisation’, i.e.
43 restricting traditional land rights (Ramcilovic-Suominen 2019). Hence, we suggest that there
44 has not been a sufficiently robust psychosocial theoretical framework to guide the design and
45 evaluation of programs and individual projects. To approach this deficit, in this paper we
46 propose self-determination theory (SDT), (Deci & Ryan 1985; 2002; Ryan and Deci 2000) as
47 a ‘lens’ to explain how some participants have been negatively affected by REDD+.

48

49 SDT and its sub-theory Basic Needs Theory (Deci and Ryan 2002), occupy a prominent place
50 in psychology texts which deal with goal-directed behaviour, motivation and well-being (c.f.
51 Deci & Ryan 1985, 2000; Gollwitzer 2012). SDT asserts that people function and develop
52 effectively as a product of their social environment and its potential to satisfy basic
53 psychological needs. Satisfaction of these needs is assumed to directly enhance motivation as
54 well as psychological and physical well-being (Deci & Ryan 2000; Moller et al. 2006).
55 Empirical evidence across cultures and a wide range of contexts supports the SDT principle
56 that experiences which increase people’s autonomy in choosing courses of action, also

57 reinforce their success in later activities, and the effects can be persistent (Ryan and Deci 2000;
58 Gagné et al 2015). In contrast, experiences which involve coercion or reluctant compliance (i.e.
59 a lack of choice) can subsequently reduce success in other activities (Vallerand 2000; Deci et
60 al. 2001; Moller et al. 2006; Blanchard et al. 2009). Hence, SDT is a suitable heuristic to
61 interpret the large amount of REDD+ data which has recently been published in the form of
62 case studies. By inference, the results of REDD+ may then be applied to other similar programs
63 or projects.

64

65 REDD+ is a climate change mitigation solution which has been developed by parties to the
66 United Nations Framework Convention on Climate Change (UNFCCC) (UN-REDD 2020a).
67 Incorporating deforestation into global climate negotiations began at the eleventh UN
68 Conference of the Parties (COP) in 2005 in Montreal. At the COP 13 in Bali in 2007, the key
69 mechanism to reduce deforestation and increase carbon capture was accepted (in principle) as
70 direct economic and financial incentives through payments to developing countries and through
71 them, to local stakeholders (Angelsen et al. 2018). For these stakeholders, safeguards such as
72 protection against human rights violations, were included at the COP 16 in Cancun in
73 December 2010. These safeguards became known as the ‘Cancun Agreements’ (UN-REDD
74 2018a; UN-REDD 2020b).

75

76 At its core, REDD+ is a financial incentives-based strategy (through performance-based
77 payments) to compensate stakeholders in return for demonstrable reductions in carbon
78 emissions from deforestation and forest degradation (Agrawal et al. 2011; Gurung and Setowati
79 2012). At REDD+ sites, interventions may include enabling policies, such as reforming land
80 tenure to assist governance and law enforcement. Incentive-based policies, such as payment
81 for environmental services (PES) may enhance local livelihoods or compensate forest users for

82 a loss of usufruct rights. Disincentives may include land-use restrictions (Duchelle et al. 2018;
83 Börner and West 2018), in which case, local people are those most likely to incur the livelihood
84 opportunity costs (Rakatama et al. 2017). Hence, even at the early stages of REDD+ project
85 planning and implementation, it was recognised that addressing the interests of local actors was
86 critical to success (Thompson et al. 2010). To avoid governance problems between national
87 and local actors in developing countries, Pedroni et al. (2009), suggested a nested approach in
88 which REDD+ projects could be established at a local level and then be subsumed into a wider
89 national REDD+ framework. However, this creates a potential paradox in which revenues from
90 REDD+ could increase the value of standing forest, thereby incentivising central government
91 bureaucracies to re-centralise control over the forest to retain the revenue. Disenfranchised
92 local stakeholders then would have little incentive to sustainably manage the forest (Sandbrook
93 et al. 2010).

94
95 By 2018, more than 350 REDD+ projects had been implemented across the tropics (Duchelle
96 et al. 2018). Early reporting of these projects (mostly from the grey literature) indicates that
97 many nations were unprepared to manage the social issues of project implementation. For
98 example, in East Africa, corruption could complicate implementation (Mwayafu and Kisekka
99 (2012), meaningful participation with local communities would be necessary in Asia (Yasmi
100 et al. 2012; Lestrelin et al. 2013), customary land rights would require protection in many
101 countries (Janki 2009; Sunderlin et al. 2013) and gender-issues had not yet been incorporated
102 into project objectives in Vietnam (Gurung and Setowati 2012). It became evident that REDD
103 + interventions needed to secure commitments from local actors expected to forgo their current
104 uses of forest resources (West 2015). Difficulties in the monitoring reporting and verification
105 (MRV) of carbon stocks have emerged. For example, on REDD+ project sites in the Brazilian
106 Amazon, the difficulty in reconciling ex-ante estimates of deforestation with ex-post reductions

107 in deforestation, has cast doubt on the methods used there to calculate carbon capture (West et
108 al. 2020). Unfortunately, of the 26 national programmes undertaken between UN-REDD and
109 partner countries, 16 had closed by 2018 (UN-REDD 2018b).

110

111 Early concerns appear to have been borne out in later case studies of REDD+ projects which
112 focused on the social impacts. These studies are the data source for this paper. Hence, the
113 purpose of this paper is to focus on the social factors which may cause REDD+ projects to
114 succeed or fail, and to provide guidelines for improved project implementation, in this case
115 through the lens of SDT. In this paper, we use a thematic analysis of positive and negative
116 outcomes in REDD+ pilot-project case studies to discover common themes – across cases and
117 across countries – which have been shown to be important to the design and delivery of REDD+
118 projects. We discuss our findings in terms of their potential psychological effects on project
119 participants. Finally, we present the implications of our findings for similar forest landscape
120 management projects.

121

122 **2. SDT as a theoretical psychosocial framework to consider REDD+ outcomes**

123

124 In SDT, people have three fundamental psychological needs: competence, relatedness and
125 autonomy (Ryan & Deci 2000; Deci & Ryan 2001). Competence concerns an individual's need
126 for a sense of mastery, in this case of their livelihoods. Relatedness corresponds to feeling
127 connected to other people, both those to whom one is close and broader society (Blanchard et
128 al. 2009; Emery et al. 2016). The inherent need for autonomy or control is fulfilled when people
129 perceive that they are the origin of their choices and decisions and actions. This does not imply
130 a need to act independently of others, but with a sense of volition, even if it is a negotiated
131 process (Van den Broek et al. 2016; Trougakos et al. 2014). Combined, these three needs are

132 similar to notions of personal *social capital*, *self-efficacy* or *agency*, which serve as useful
133 heuristics to link social theory with empirical observations of human behaviour (c.f. Hitlin
134 2007). The three needs also provide a complementary and more personally oriented approach
135 to the principles of participatory stakeholder engagement, empowerment and equity promoted
136 in REDD+ and FLR.

137

138 The usefulness of SDT as a theoretical lens through which to interpret REDD+ psychological
139 impacts comes from its ability to explain human motivation. Satisfaction of people's needs for
140 competence, relatedness and autonomy yields positive outcomes in terms of motivation, i.e.
141 the mental energy, drive and persistence that determine the direction, intensity, and
142 sustainability of their behaviour (Ryan and Deci 2000). In SDT, motivation is considered as a
143 continuum of varying degrees of individual autonomy. At one extreme of the continuum,
144 intrinsic motivation is associated with high levels of self-determination or a perceived ability
145 to achieve personal goals. Further down the scale is extrinsic motivation, and then ultimately
146 amotivation, which is characterised by passivity and a lack of any impetus for personal
147 autonomy.

148

149 In contrast to intrinsic motivation, extrinsic motivation is characterised by compliance either
150 to promised rewards or punishment, both of which reduce the enthusiasm, time and energy
151 people devote to required behaviours. Empirical studies, for example Deci et al. (2001), have
152 shown the detrimental long-term effects of extrinsic motivation which condition people to a
153 perception of an external *locus of causality*. People with an external locus of causality view
154 themselves as 'pawns' to external forces (such as luck), compared with people with an internal
155 locus of causality in which they see themselves as the origin of their behaviour, possibly
156 through ability or effort (Ryan and Connell 1989; Moller et al. 2006). In recent years, SDT has

157 been widely used in studies of workplace productivity (Howard et al. 2016), leadership style
158 (Rezvani et al. 2017) and adolescent development (Russo and Stattin, 2017). In a manner
159 analogous to the way success in REDD+ or FLR projects is predicated on community cohesion
160 and democratic governance, Blanchard et al. (2009) used SDT as the theoretical basis of
161 research into the effect of coaching style and management on team cohesion and individual
162 motivation in sport.

163

164 SDT can provide important insights into the design and implementation of forest conservation
165 and restoration programs. For example, if a project or program is designed or implemented so
166 that participants have little or no input to the purpose, design, goals and social groupings, their
167 motivation is likely to eroded. Furthermore, if support is seen merely as a payment or a reward
168 for taking part, and if this reward is not contingent on performance towards defined
169 performance indicators – which are accepted as being important and meaningful by the
170 participants – the support is likely to reduce participants’ perceptions of control. The rewards
171 will not be seen as a reflection of competence and participants’ intrinsic motivation will
172 consequently be reduced (Lepper et al. 1973; Deci and Ryan 1985).

173

174 **3. Methods: Assembling evidence from the literature and conducting a thematic analysis**

175

176 Most REDD+ planning, and implementation has occurred as REDD+ Readiness activities and
177 pilot projects. Hence, our methods were predicated on case studies of these projects. We used
178 the Scopus and Science Direct databases to conduct searches using the terms ‘REDD+’,
179 ‘carbon forestry’ and ‘reducing emissions from deforestation and forest degradation in
180 developing countries’. Much of the REDD+ literature is focused on financing, the difficulty of
181 the MRV of carbon stocks and the complexities of inter- and intranational cooperation required

182 to make REDD+ succeed as a global mechanism. In this case, we wished to examine the direct
183 effect of projects on participants livelihoods. Hence, our approach was purposive in selecting
184 case studies in which the authors directly addressed local participants' acceptance or rejection
185 of REDD+, often expressed as direct quotes from interviews. We found 46 REDD+ empirical
186 case studies from 18 countries which reported the success and failure of projects in these terms.
187 The studies were published between 2011-2019, with 78 percent of them being published
188 between 2017-2019. Because we wished to examine the relevance of data related to the three
189 SDT needs of competence, relatedness and autonomy, using procedures described by Braun
190 and Clarke (2006) and Maguire and Delahunt (2017), we undertook a thematic analysis of the
191 cases, using the three SDT needs as potential themes. The purpose of a thematic analysis is to
192 identify or validate themes or patterns within, for example, interview transcripts or the cases
193 of a case study. The output is typically expressed as a thematic map which depicts the
194 relationships between the themes. In our case, the purpose of the analysis and the resultant map
195 was to determine whether we could find common factors or patterns in the cases which could
196 be linked to the psychological competence, relatedness and autonomy of project participants.
197
198 We extracted qualitative quotations or statements from the cases which referred to positive or
199 negative REDD+ project outcomes (Table 1, Appendix 1). We were cognisant of the need for
200 care when inferring a general meaning from statements or quotations unless the sampling
201 framework is representative of the population or community (c.f. Atmadja and Sills 2016).
202 Hence, we used the extracts as 'signals' that the authors considered an issue to be important.
203 The units of analysis of this study therefore became the findings of the authors, in a case study
204 of REDD+, in a specific country. Inevitably, some countries (e.g. Indonesia, Nepal), feature in
205 the REDD+ literature more than others. Accordingly, we also collated the number of countries
206 in which a particular outcome became apparent.

207

208 A re-reading of the extracts in the context of each case suggested that they could be classified
209 into the three themes and then coded as belonging to three, three and two sub-themes which
210 referred to the three main themes, respectively. For the theme ‘competence’, improved or
211 reduced opportunities for livelihood opportunities were coded as ‘+C’ or ‘-C’, respectively.
212 Participants’ positive or negative perception of the usefulness of technology supplied to them
213 was coded as ‘+T’ or ‘-T’. The adequacy or inadequacy of financial compensation was coded
214 as ‘+Fin’ or ‘-Fin’. For the theme ‘relatedness’, the extracts were also coded as three sub-
215 themes, i.e. as equity or inequity in benefit distribution or participation (+Eq or -Eq), inclusion
216 or exclusion from project activities (+Inc or -Inc), or changes to the trust (+Tr or -Tr) between
217 stakeholders. For the theme ‘autonomy’, extracts were collated as two sub-themes i.e. as
218 reflecting voluntary participation or coercion (+Vol or -Vol) and attempts by governments or
219 other stakeholders to improve or reduce participants’ property rights (+P or -P). As a final step,
220 we synthesised our results as a thematic map of the as sub-themes which captured the
221 relationship between the sub-themes and the three main SDT themes.

222

223 Several of these codes could be applied to more than one theme. For example, coercion could
224 reduce participants’ relatedness and their autonomy. Also, the extracts and our coding do not
225 imply causality, i.e. that REDD+ projects had actually caused the negative outcomes.
226 Underlying social factors may have contributed, or the projects may have exacerbated existing
227 situations such as unstable governance. However, negative outcomes indicate how well-
228 intentioned and well-planned projects may have unexpected outcomes and these outcomes
229 become more important if they can be found to occur in more than one context or country.

230

231 As examples of our coding, an extract from Atela et al (2015, in Kenya), that ‘... has not met
232 community expectations because of the opportunity costs imposed by restricted forest access’.
233 was coded as code ‘-C’, i.e. a restriction to livelihood activities. The problem of complex or
234 inappropriate technology (code -T) was exemplified by an extract from Sanders et al. (2017,
235 in Indonesia), that ‘we don’t want to accept it because it is too difficult’. The risk of accepting
236 financial compensation for surrendering existing rights (code -Fin) was described by Khatri et
237 al. (2017, in Nepal), as ‘imposing risks for households with very little resources’.

238

239 We coded inequity in benefit distribution (code -Eq) for an extract from Williams and Dupuy
240 (2019, in Vietnam), which noted that ‘corruption risks relating to rightful landowners not
241 receiving a fair proportion of benefits due to inadequate consultation were high’. An extract
242 from Satyal et al. (2018, in Nepal), that ‘Dalits¹ were excluded from decision making... due
243 to... lack of information and communication...’ was coded as a typical example of exclusion
244 from project activities (code -Inc). Trust between project participants was characterised by
245 extracts which indicated a very low level of trust (code -TR) between participants and
246 government agencies. For example, Dawson et al. (2018, in Uganda), noted that: ‘The locals
247 don’t agree, the trust isn’t developed ... so when you go back after 2-10 or 15 years, and see
248 the forest has been burnt down’.

249

250 We found an example of coercion (code -Vol) in Massarella et al. (2018, in Tanzania), that
251 ‘other actors blamed the ‘top-down’ approach of REDD+ convincing people to do whatever
252 they want them to do’. An example of a potentially adverse effect on property rights (code -P)
253 was found in West (2018, in Brazil), that ‘the 5 percent of community members who did not

¹ In Nepal, Dalits are one of the lower social castes.

254 support the REDD + projects were mainly from one village that still profited from illegal
255 logging’.

256

257 After coding the extracts, we collated them into sub-themes (Table 1, Appendix 1). We then
258 checked our coding to ensure that the text of the codes expressed the original intent of the
259 authors. Finally, we synthesised the results as a thematic map which became the basis of our
260 assessment of the effect of the sub-themes (in their positive and negative states) on the main
261 themes of competence, relatedness and autonomy.

262

263 **4. Results: The incidence and nature of coded extracts and their relationship to sub-** 264 **themes and themes**

265

266 The most striking result of coding the extracts was the unambiguous manner in which negative
267 comments were expressed. For example, the use of language such as ‘increased hardship’,
268 ‘intimidation’ and ‘a feeling of injustice’ indicates that authors felt that these problems should
269 be urgently addressed. Positive outcomes (e.g. that ‘payments... reflect local norms’) were
270 more mildly expressed, probably because that particular project was successful, in that aspect
271 at least. However, the frequency of both positive and negative coded extracts reflects the
272 collective lessons which have emerged from REDD+ projects.

273

274 In the 46 cases, in 18 countries overall, we found 39 references to participants’ competency,
275 31 outcomes related to participants’ relatedness, and 28 outcomes related to participants’
276 autonomy (Table 1, Appendix 1). This data is presented as the incidence of positive and
277 negative outcomes (separately) and as a percentage of the 46 cases. There was wide variation
278 in the state (positive or negative) of the sub-coded extracts which were collated into the sub-

279 themes. The percentage of extracts which were coded as indicating a positive project outcome
280 (e.g. voluntary participation) ranged between 0-7 percent of the total of the 46 cases. The
281 percentage of extracts which were coded as indicating a deleterious project outcome ranged
282 between 11-33 percent of the 46 cases. The validity of the subthemes is supported by the
283 consistent manner in which they are mentioned in the cases, i.e. in a range of 17-37 percent of
284 the 46 cases. Also, across countries, the incidence of the coded extracts was consistently high,
285 i.e. a range of 7-13 of the 18 countries (Table 1).

286

287 Table 1. Results of coding extracts from 46 cases into sub-themes and themes and the number
288 of countries from which the coded extracts were derived

289

290 *(insert Table 1 here)*

291

292 **4.1 Depicting the thematic analysis as a map**

293

294 Depicting the thematic analysis as a map captured the broader relationship between the sub-
295 themes and the three main themes (Figure 1).

296

297 *(Insert Figure 1 here)*

298

299 Figure 1. Thematic map depicting the relationship between the three main themes and the eight
300 sub-themes. Sub-themes printed in italics are pre-requisites for a successful REDD+ project.
301 Sub-themes printed in normal font are more open to negotiation between project managers and
302 participants.

303

304 From the perspective of an individual participant, the map depicts the ‘lessons’ from the
305 REDD+ cases. The map shows the influence of improved or restricted livelihood opportunities
306 on participants’ competence or mastery of their livelihoods. New technology is only useful if
307 it assists participants to develop their livelihoods. Participants’ perspective on PES depends on
308 whether it is less than the opportunity cost of existing livelihood activities or it enables
309 participants to branch out into other livelihood activities. In the latter case their competence or
310 mastery of their livelihood activities is increased. In terms of relatedness, the equitable
311 distribution of benefits, a feeling that other participants are trustworthy and being included in
312 REDD+ planning and implementation are all likely to improve participants’ ability to liaise
313 and cooperate with the wider community. Collective action becomes possible. Similarly,
314 voluntary participation in REDD+ activities and improvements rather than restrictions to
315 property rights perceive that they are the origin of their choices and decisions.

316

317 **5. Discussion: Implications of the thematic analysis for REDD+ projects**

318

319 For REDD+ planning and implementation, the sub-themes act as a cautionary tale. In terms of
320 SDT, the evidence indicates that REDD+ activities may affect individual participants positively
321 towards intrinsic motivation and a higher level of self-determination. Negative experiences
322 shift participants or groups the other way, towards extrinsic motivation and an external locus
323 of causality. The force of some participants’ comments, e.g. ‘we decide what is good for us,
324 you don’t come from the coastland telling us this should be good for you’, (Airey and Krause
325 2018, p.62) provides an authenticity which is hard to reject.

326

327 Although the influence of the sub-themes can be analysed separately, except for technology,
328 they clearly influence each other. For example, the degree of trust between participants

329 influences their willingness to cooperate. The cases suggest that four sub-themes, i.e. trust,
330 inclusion, equity and voluntary participation are pre-requisites for a successful REDD+ project.
331 Non-government organisations can build trusting relationships with government officials and
332 local people (c.f. Harada et al. 2015). Participatory extension activities can ensure equity and
333 inclusion of all stakeholders (c.f. Jindal et al. 2012; Saeed 2018), and this results in voluntary
334 participation (c.f. Vatn et al. 2017). If these sub-themes are positive, participants' intrinsic
335 motivation for participation or collective action may be increased. In terms of the Cancun
336 safeguards, the need for 'free prior and informed consent' (FPIC), and the general ethical
337 consideration of 'do no harm', we regard a positive state for these sub-themes as a prerequisite.
338 This leaves the other three sub-themes, PES, improvements to livelihood opportunities and
339 property rights as the three main sub-themes open to negotiation between participants and
340 project managers.

341

342 **5.1 The effect of PES on participants' competence**

343

344 The effectiveness of PES in REDD+ projects is complicated by the lack of a robust
345 methodology for calculating costs and benefits (Rakatama et al. 2017). As defined by Ishihara
346 et al. (2017), preconditions for PES to be successful are mutual trust, reliability in payments,
347 secure land tenure (Wunder 2013), additionality (Garbach et al. 2012), and credible institutions
348 (Jespersen and Gallemore 2017). Ensuring that all these conditions are met has often proved to
349 be elusive.

350

351 Evidence from Costa Rica and Indonesia (c.f. Rakatama et al. 2018; (Rosendal and Schei 2014,
352 respectively) suggests that participants' acceptance of PES depends on their socio-economic
353 circumstances and that participants are more concerned with costs rather than benefits (Sheng

354 et al. 2017, Rakatama 2017; Kohl et al. 2020; Rakatama et al. 2020). This particularly applies
355 to poor families (Pokorny et al. 2013) and situations where participants' use of the forest has
356 been reduced without adequate compensation (c.f. Twongyirwe 2015; Chomba 2016;
357 Ramcilovic and Suominen 2019). A further complication is that some participants prefer cash
358 payments (c.f. (Jacob and Brockington 2018 whereas others prefer improvements to
359 community infrastructure (Rakatama et al. 2018; Holmes 2018).

360

361 Even nationally funded PES schemes can prove to be vulnerable. In recent years, PES proved
362 highly successful in conserving forest in Ecuador but a financial crisis in 2015 caused payments
363 to be suspended. Large-scale deforestation soon followed (Etchart et al. 2020). A further
364 recurrent problem for PES is that equitable benefit distribution is all too infrequent (c.f. Pascual
365 et al. 2014; Duong and de Groot 2018; Andersson et al. 2018; Benjamin et al. 2018).
366 Participants' relatedness consequently suffers. With cash payments, there is also a risk of
367 eroding or 'crowding out' intrinsic motivation for innovation and experimentation (Muradian
368 et al. 2013; Hayes et al. 2015; Howson 2018).

369

370 Costa Rica's PES scheme is credited with protecting remaining natural forest and encouraging
371 reforestation. However, financing is provided through taxes and supported by legislation
372 (Wallbott et al. 2019). In contrast, REDD+ requires external funding and requires political
373 cooperation at many levels (Sills and Mattson, 2014). This introduces the risk of corruption
374 and dilution of payments to local participants (c.f. Khatri et al. 2017; Sander et al. 2017;
375 Samndong 2018).

376 For the distribution of benefits to individual households or communities, we see the element of
377 choice as being essential. As an extension of Rakatama et al. (2018a) that households should
378 be closely involved in PES distribution, we suggest that including technology (e.g. training and

379 capacity building) may assist PES to be more effective. For example, agroforestry crops such
380 as cacao and coffee are popular in many tropical countries. However, farmers often lack
381 training, fertilizer and genetically improved plants. Technology transfer also improves
382 participants' mastery over their livelihoods and their intrinsic motivation to succeed. The lesson
383 from the Landcare program in the Philippines is that technology transfer succeeds when it
384 encourages farmers to choose technology which suits their needs. As markets change, farmers'
385 needs also change and they select aspects of technology to make their own 'recipe' for farm
386 improvements (Cramb and Culasero 2003; Newby and Cramb 2011). Hence, if technology is
387 to be included with PES, responsive, farmer-first and long-term assistance may be required.
388 Capacity building and technology transfer may have a more permanent effect than the
389 ephemeral effect of cash payments. This may ameliorate the worst-case scenario described by
390 Howson (2018) of villagers in Indonesia wasting PES payments because they are not familiar
391 with managing money.

392

393 **5.2 The effect of trust, inclusion and equity on participants' relatedness**

394

395 Exclusion from project activities, inequitable benefit distribution and a lack of trust between
396 stakeholders, all act to reduce participants' relatedness. In the REDD+ literature, McCall
397 (2016) interpreted landscape in terms of 'social space', rather than physical space. We concur,
398 and we acknowledge that as proposed by Reineke and Blum (2018) that physical landscapes
399 can be large or small. The evidence from REDD+ clearly indicates the difficulty of increasing
400 landscape scale – together with the consequent number of stakeholders – and maintaining
401 mutual respect between stakeholder groups. Social differences are likely to emerge as
402 landscape scale increases and relatedness consequently suffers. These findings are consistent
403 with group theory first proposed by Cooley (1909) that as group size increases, deviance

404 amongst ordinary members is more likely and difficult to control. For project planners, our
405 conclusion is that a key challenge is to determine the set of stakeholders who have the social
406 cohesion to allow them to work together. The trade-off between improved social cohesion
407 which conserves forest at one project site and shifting deforestation elsewhere, will remain.
408 However, the presence of ‘free riders’ or disaffected community members precludes successful
409 collective action.

410

411 **5.3 The effect of voluntary participation and property rights on participants’ autonomy**

412

413 For project participants, coercion can come in several forms. If people do not participate, they
414 may lose forest usufruct rights and livelihood autonomy to other participants. The tendency by
415 governments to use programs such as REDD+ as a hidden agenda to increase control over
416 traditionally managed land (c.f. Eilenberg 2018), also coerces people to participate, even if just
417 to maintain their existing rights. As described by Satyal et al. (2018) this can invoke a passive
418 ‘smile’ type of reluctant acquiescence. Coercion for participants to accept benefits as finance
419 for micro-enterprises can also result in a loss of family assets if the enterprise fails (c.f.
420 LICADHO 2019). The problem is that coercion prevents autonomy in livelihood choice, and
421 this reduces the intrinsic motivation that comes with an internal locus of causality. In the same
422 manner as capacity building and technology transfer improves participants’ competence, we
423 suggest that these two forms of assistance may improve participants’ autonomy. Participants’
424 traditional reluctance to surrender existing forest usufruct rights indicates that this assistance
425 may be required in the medium to long term.

426

427 **6. Conclusion**

428

429 In this paper, we have used SDT and a thematic analysis to interpret the results of REDD+ case
430 studies to show how the ability of project participants to succeed at challenging tasks, liaise
431 productively with other people and choose and initiate courses of action can be affected. The
432 limitation of this research is that participants' intrinsic motivation is only one of the factors
433 needed to make REDD+ succeed. Finance, MRV and the need for 'additionality' regarding the
434 amount of carbon captured, all act as factors which must be optimised. However, the
435 vehemence of some participants' comments indicates that while intrinsic motivation may not
436 be sufficient to make REDD+ succeed, extrinsic motivation and apathy may cause it to fail.
437 Further research is needed to understand the mindset of individual participants or groups of
438 participants and how their concerns might be addressed. We suggest that the REDD+ agenda
439 of capturing carbon and preserving biodiversity may be irrelevant to impoverished farmers.
440 Forest and trees are likely to be of interest to these people only in so far as they relate to their
441 livelihoods. In technical terms, a re-ordering of REDD+ objectives away from PES, large-scale
442 and multi-stakeholder projects *per se*, may be warranted. In social-science terms, assisting
443 participants' competency, relatedness and autonomy via livelihood development may also be
444 necessary. Applying psychosocial theory to project design and implementation may avoid
445 negative and potentially negative and long-term outcomes on the psychological well-being of
446 client participants.

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940 Table 1. Results of coding extracts from 46 cases from 18 countries into themes, sub-themes
 941 and states
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Theme	Sub-theme and state (+ or -)	Case study authors and the country in which REDD+ projects were undertaken	Number and percentage of 46 cases for each sub-theme and state
Competence	+C	Groom and Palmer, (2012, China) Vatn et al. (2017, Tanzania) Nathan and Pasgaard, (2017, Cambodia)	3 cases, 7%
	-C	Ramcilovic-Suominen, (2019, Laos) Shrestha and Shrestha, (2017, Nepal) Fisher et al. (2018, Uganda) Atela et al. (2015, Kenya) Pearse and Dehn, (2011, Indonesia) Boer, (2018, Indonesia) Muttaqin et al. (2019, Indonesia) Gauthier, (2018, DR Congo)	8 cases, 17%
	+T		0 cases, 0%
	-T	Airey and Krause,(2018 Guyana) Lund et al. (2017, Tanzania) Massarella et al. (2018, Tanzania) Dawson et al. (2018, Nepal and Uganda) Fischer and Hajdu (2018, Uganda) Pearse and Dehn, (2011, Indonesia) Sanders et al. (2017, Indonesia) Muttaqin et al. (2019, Indonesia) Saeed, (2018, Ghana) Walbott and Rosendal, (2018, Costa Rica) Guadalupe et al. (2018, Brazil)	11 cases, 24%
	+Fin	Jacob and Brockington, (2018, Tanzania) West, (2015, Brazil)	2 cases, 4%
	-Fin	Jindal et al. (2012, Mozambique) Konsager and Corbera, (2015, Belize) Saito-Jensen et al. (2014, Nepal) Khatri et al. (2017, Nepal) Twongyirwe, (2015, Uganda) Fisher et al. (2018, Uganda) Atela et al. (2015, Kenya) Chomba et al. (2016, Kenya) Pelletier et al. (2018, DR Congo) Howson, (2018, Indonesia) Work, (2018, Cambodia) Enrici and Hubacek, (2018, Indonesia) Nathan and Pasgaard, (2017, Cambodia) Saeed, (2018, Ghana) Walbott and Rosendal, (2018, Costa Rica)	15 cases, 33%

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Relatedness	+Eq	Jindal et al. (2012, Mozambique) Vatn et al. (2017, Tanzania) Atela et al. (2015, Kenya)	3 cases, 7%
	-Eq	La Rose, (2013, Guyana) Duong and Groot, (2018, Vietnam) Williams and Dupuy, (2019, Vietnam) Lund et al. (2017, Tanzania) Saito-Jensen et al. (2014, Nepal) Howson, (2018, Indonesia) Dawson et al. (2018, Nepal and Uganda) Boer, (2019, Indonesia) Samndong, (2018, DR Congo) Nathan and Pasgaard, (2017, Cambodia)	10 cases, 22%
	+Inc	Jacob and Brockington, (2018, Tanzania) Satyal et al. (2018, Nepal) Saeed, (2018, Ghana)	3 cases, 7%
	-Inc	Nantongo (2017, Tanzania) Atela et al. (2015, Kenya) Jacob and Brockington, (2018, Tanzania) Massarella et al. (2018, Tanzania) Khatri et al. (2017, Nepal) Satyal et al. (2018, Nepal) Eilenberg, (2018, Indonesia)	7 cases, 15%
	+Tr	Harada et al. (2015, Indonesia) West, (2015, Brazil)	2 cases, 4%
	-Tr	La Rose, (2013, Guyana) Andrews and Mulder, 2018, Tanzania) Luintel et al. (2018, Nepal) Dawson et al. (2018, Nepal and Uganda) Kansanga and Luginaah, (2019, Uganda) Pearse and Dehn, (2011, Indonesia)	6 cases, 13%
Autonomy	+Vol	Vatn et al. (2017, Tanzania)	1 case, 2%
	-Vol	Groom and Palmer, (2012, China) Satyal et al. (2018, Nepal) Airey and Krause, (2018 Guyana) Ramcilovic-Suominen, (2019, Laos) Khatri et al. (2017, Nepal) Massarella et al. (2018, Tanzania) Dawson et al. (2018, Nepal and Uganda) Fischer and Hajdu (2018, Uganda) Chomba et al. (2016, Kenya) Pearse and Dehn, (2011, Indonesia) Eilenberg, (2018, Indonesia) Sanders et al. (2017, Indonesia) Howson, (2018, Indonesia) Enrici and Hubacek, (2018, Indonesia) Work, (2018, Cambodia) Holmes et al. (2018, Panama)	16 cases, 35%
	+P	Nathan and Pasgaard, (2017, Cambodia)	1 case, 2%
	-P	Jindal et al. (2012, Mozambique) Hoang, (2018, Vietnam) Ramcilovic-Suominen, (2019, Laos) Boer, (2018, Indonesia) Vatn et al. (2017, Tanzania) Twongyirwe, (2015, Uganda) Kansanga and Luginaah, (2019, Uganda) Chomba et al. (2016, Kenya) Eilenberg, (2018, Indonesia) West, (2015, Brazil) Gauthier, (2018, DR Congo)	11 cases, 24%

944 **MITI-D-20-00133R1: Psychological Outcomes of REDD+ Projects: Evidence from Country**
 945 **Case Studies**

946 **Appendix 1.** Extracts from 46 REDD+ case studies which show positive (italics) or negative
 947 (normal font) social outcomes, grouped according to three themes, i.e. the SDT needs for
 948 competence, relatedness and autonomy. Extracts for the theme ‘competence’ were coded as
 949 reflecting improved opportunities (+C) or restrictions (–C) to livelihood activities, perceived
 950 usefulness of technology supplied to participants (+T or –T) and the adequacy or inadequacy
 951 of financial compensation (+Fin or –Fin). For the theme of ‘relatedness’, the extracts were
 952 coded as reflecting equity or inequity in benefit distribution or participation (+Eq or –Eq),
 953 inclusion or exclusion from project activities (+Inc or –Inc) or changes to the trust (+Tr or –Tr)
 954 between stakeholders. For the theme ‘autonomy’, extracts were coded as reflecting voluntary
 955 participation or coercion to participate (+Vol or –Vol) and attempts by governments of other
 956 stakeholders to improve or reduce participants’ property rights (+P or –P).

Case Study	SDT needs		
	Competence	Relatedness	Autonomy
Groom and Palmer, (2012, China)	The SLCP appeared to restrict autonomy in terms of how households allocated their labour. (p.48) (+C)		A lack of autonomy... over land use... may result in unwelcome and unwanted shifts in livelihoods. (p. 51, China) In some places the program was involuntary... (p.49, China) (–Vol)
Jindal et al. (2012, Mozambique)	... the most important threat to permanence is the extremely long contract period. ...based in a 100 year contract period... (which) subjects future generations to a rule they may not agree with. (p. 2133) (–Fin)	<i>The existence of the community fund has enabled households to better articulate their development needs.</i> (p.2132) (+Eq)	Non-participating households may also face increased hardship from a ban on harvesting from the large tract of miombo forest under REDD activities. (p.2132) (–P)
Konsager and Corbera, (2015, Belize)	...projects should have contributed more to surrounding villages by promoting alternative livelihood activities,		

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	such as handcrafts... (p. 139) (- Fin)		
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<p>La Rose, (2013, Guyana)</p>		<p>There is much intimidation in getting the leaders to sign the document. (p. 9) (-Eq) ...those who dare... are publicly vilified... (p.9), (-Tr)</p>	
<p>Airey and Krause,(2018 Guyana)</p>	<p>No one really understand about it... We ain't getting the understanding... (p. 58) (-T)</p>		<p>...we decide what is ours, we decide what is good for us, you don't come from the coastland telling us that this should be good for you (p. 62) (-Vol)</p>
<p>Duong and Groot, (2018, Vietnam)</p>		<p>Households on one side of the commune boundary may receive a much lower payment ... than those on the other side, even though they may be more active to protect their forest. (p.27) The basic distributional principle... paying the most to households and communities which own the most forest... open to being felt as an injustice... (p.28) (-Eq)</p>	
<p>Hoang, (2018, Vietnam)</p>			<p>This...is my garden. I have the legal right to ask everyone to leave it, not only you guys, but also the UN-REDD staff (p.529) (-P)</p>
<p>Williams and Dupuy, (2019, Vietnam)</p>		<p>Just over a third of our case interviewees... noted that corruption risks relating to rightful landowners not receiving a fair proportion of benefits due to inadequate consultation were high. (p.2139) (-Eq)</p>	

Ramcilovic-Suominen, (2019, Laos)	By addressing... small-scale drivers such as subsistence agriculture, REDD+ directly limits villager's main source of livelihoods... (p. 277) (-C)		REDD+ acts as a tool for state territorialisation... by... regulate village forest uses and users. (p. 263) (-P) (REDD+) advances the Laos political economy, political elite and power establishment. (p. 277) (-Vol)
Vatn et al. (2017, Tanzania)	<i>Similarly, quite positive... provision of knowledge, creation of awareness emphasis on village development... (p.6) (+C)</i>	<i>Payments were equal per person... reflect local norms... (p.8) (+Eq)</i>	...23 out of 240 households had to leave their homes and resettle...there were instances of burned homes. (p.6) (-P) ... a large majority felt that they felt free to decide... (+Vol)
Lund et al. (2017, Tanzania)	It took my people by surprise to learn how technical and complex REDD+ is. (p.132) (-T)	Tenure conflicts... lack of local governance... were key challenges across projects (p.132) (-Eq)	
Nantongo (2017, Tanzania)		Although there was an early socio-economic study to assess the livelihoods of local people... there was no consultation with the locals... (-Inc)	
Andrews and Mulder, 2018, Tanzania)		REDD-ready SCC in Pemba vary extensively in the trust that they are viewed by community members... (p.105) (-Tr)	
Jacob and Brockington, (2018, Tanzania)	<i>The availability of carbon revenues has made a material difference to villagers' lives... (p.6) (+Fin)</i>	They (...officials...) attend so many trainings but they don't share. (p.5) (-Inc) <i>...complaints that supporting a school only benefits families with children... If only there were many other villagers with that sort of internal debate. (p.6) (+Inc)</i>	

Massarella et al. (2018, Tanzania)	You can pilot and you can forget. But our idea was to do something and then... repeat from there. (p.383) (-T)	... a feeling of injustice that the project only benefitted a few people... (p.381) (-Inc)	Other actors blamed the 'top-down' approach of REDD+ 'convincing people to do whatever they want them to do'. (p.382) (-Vol)
Saito-Jensen et al. (2014, Nepal)	... some recipients viewed the benefits as burdens... the use of payments for higher-value items such as biogas plants may risk inadvertently indebting recipients... (p.689) (-Fin)	Targeting of specific social groups resulted in contestation at the local level... This approach resulted in shame and denial by some of those who were labelled as poor. (p.689) (-Eq)	
Shrestha and Shrestha, (2017, Nepal)	REDD+ payments do not play a significant part in participation... due to the predefined criteria in the REDD+ payment mechanism. (p.69) (-C)		
Khatri et al. (2017, Nepal)	Providing a loan for a market-based activity can actually impose risks for households with very little resources. (p.4) (-Fin)	... in some cases, the distribution of pilot money to different social groups did not materialise. (p.4) (-Inc)	... it required that the CFUGs invest at least 40% of the payments... as a condition of further payments. (p.4) (-Vol)
Satyal et al. (2018, Nepal)		Dalits were excluded from decision making... due to... lack of information and communication... (p.9) (-Inc) ... <i>women and Dalits have all actively participated...</i> (p.8) (+Inc)	It has become a passive 'smile' type of participation. (p. 10) (-Vol)
Luintel et al. (2018, Nepal)		Mutual trust... is found to have no relation with carbon storage. (p.45) (-Tr)	

Twongyirwe, (2015, Uganda)	... the funding of REDD+ is so huge that our corrupt officials cannot relay where it is meant to go (p.284) (- Fin)		... if REDD+ imposes further controls on the use of forest resources and rewards others, the Batwa may revolt. (p.289 (- P))
Dawson et al. (2018, Nepal and Uganda)	It is clear that no-one has a common understanding of REDD+. (p.3) (- T) The locals don't agree, the trust isn't developed ... so when you go back after 2-10 or 15 years and see the forest has been burnt down. (p.3) (- Tr) ...participants stressed that inclusion criteria ... to ensure marginalised groups participate... were meaningless because their quality of participation was negligible. (p.4) (- Eq)	I refer to it as 'climate colonisation'. (p.3) (- Vol)
Fisher et al. (2018, Uganda)	...participants are not actively involved in project design... and the project confers restrictions... (p.267) (- C) ... and they are paying little money and we have sacrificed our land to... ... benefit sharing is a myth... (p.264) (- Fin)		
Kansanga and Luginaah, (2019, Uganda)		...to get even temporary access to farmland in the forest you have to pass through an influential person using money... (p.138) (- Tr)	As I speak, there is no other land to go to... Yet, the GFC taskforce keeps destroying our farms. (p. 137) (- P)
Fischer and Hajdu (2018, Uganda)	...favouring of technical ...competence... over local knowledge... (p. 337) (- T)		... some actors have had the power to impose their will on others (p.329) Communities may resist the project since the NFA used force... (p.332) (- Vol)

<p>Atela et al. (2015, Kenya)</p>	<p>... this equitable share has not met community expectations because of the opportunity costs imposed by restricted forest access. (p. 247) (-C) The (forest service) staff asserted that REDD+ funds linked to the hills would be channelled to central government. (p.246) (-Fin)</p>	<p>Even though non-group members may be excluded... (p.242) (-Inc) <i>Low-wealth respondents perceived that incorporating communal land into the project improved their bargaining power...</i> (p.246) (+Eq)</p>	
<p>Chomba et al. (2016, Kenya)</p>	<p>... the big losers were the smallholder farmers who wore the opportunity cost ... and received very modest benefits. (p.207) (-Fin)</p>		<p>... the project often led to landowners, despite often being absentee, imposing greater control over their land... (p.210) (-P) ... illegal squatters were peacefully removed. (p.210) (-Vol)</p>
<p>Pearse and Dehn, (2011, Indonesia)</p>	<p>This tension between human rights and economic efficiency is inescapable... (p.21) (-C) ...not listening to local knowledge and wisdom... (p.13) (-T)</p>	<p>Project implementation is bringing unrest and internal conflict to the community... (p.17) (-Tr)</p>	<p>The continued lack of respect for... FPIC... and the rights of affected communities... (p.10) (-Vol)</p>
<p>Harada et al. (2015, Indonesia)</p>		<p><i>The local NGO built confident relationships with the national park authorities... trust with (local people) was built...</i> (p. 15) (+Tr)</p>	
<p>Eilenberg, (2018, Indonesia)</p>		<p>...communicated within elite networks at district level and only sporadic information reached the community level... (p.55) REDD+ was seen... as yet another attempt by central government to take control over customary forest (p.57) (-Inc)</p>	<p>REDD+ was seen... as yet another attempt by central government to take control over customary forest (p.57) (-P) REDD+ initiatives were... appropriated locally based on past experiences of resource struggle, exclusion and dispossession... (p.56) (-Vol)</p>

Sanders et al. (2017, Indonesia)	... we don't want to accept it because it is too difficult... (p.75) ... a lack of learning from local wisdom was a key grievance... (p. 75) (-T)		It seems that we are working for UNDP rather than independently... (p.76) ... local actors tended to see themselves as subjects of controlled lab experiments or guinea pigs, rather than having agency of control of their options... (p.76) (-Vol)
Howson, (2018, Indonesia)	Some farmers do not understand money. When they get it, they spend it on silly things. They get into trouble sometimes. (p.140) (-Fin)	Women were included in the project yet the construction of alternative livelihoods ... concreting the essentialist dichotomies of masculinity and femininity. (p.142). (-Eq)	...incentives from a REDD+ project... are a sort of ecological ransom... (p.143) (-Vol)
Enrici and Hubacek, (2018, Indonesia)	People that are typically involved in REDD have very little business experience. So... the only people who have succeeded are primarily people who have business experience. But I see people here, they get money from the clouds and they spend it, because it's not theirs. (on-line reference) (-Fin)		You're going around bothering people all the time... they are so fatigued... they're like 'please go away'. (on-line reference) (-Vol)
Boer, (2018, Indonesia)	Spatial planning operates as an instrument of... demarcation, specifying zones where certain forest activities are permitted and others prohibited. (p. 8) Forest Management Units operate through a local statutory body that has the authority to plan and regulate all activities in the forest area... (p.8) (-C)		... the state has operated... for political and business elites to exploit forests for private gain. (p. 10) (-P)

Muttaqin et al. (2019, Indonesia)	communities face constraints... (1) limited funds; (2) lack of skills and knowledge; (3) limited access to resources (on-line reference) (-C) Traditional forest management institutions need to be formally recognized, enhanced and strengthened (on-line reference) (-T)		
Boer, (2019, Indonesia)		...lack of inclusion of community input in the project design; and all activities were externally designed and pre-planned with no room for community members to provide feedback (p.176) (-Eq)	
Saeed, (2018, Ghana)	The technical nature of REDD+... removed from the understanding and involvement of local stakeholders. (p.56) (-T) Ghana's readiness process has not been able to establish what the risks and benefits are for each stakeholder group. (p.56) (-Fin)	... <i>the FC REDD+ unit reportedly goes... out of the way to look for those who have been left out and bring them on-board.</i> (p.52) (+Inc)	
Walbott and Rosendal, (2018, Costa Rica)	... pressure for early action... challenges the ... knowledge transfer mechanisms... (p.116) (-T) ... it is difficult for small property holders to access money on the carbon markets... (p.117) (-Fin)		
Guadalupe et al. (2018, Brazil)	The state of Amapa is still struggling with key aspects of REDD+ monitoring. (p.1) (-T)		

West, (2015, Brazil)	<i>Potentially the greatest achievement ... was the successful development of a financial mechanism to secure equitable REDD + revenue allocation</i> (p11) (+Fin)	<i>... the community was found to be mostly engaged with the project's goals and strategies. It is clear that the role played by partner NGOs</i>	The 5% of community members who did not support the REDD + projects were mainly from one village that still profited from illegal logging. These
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		<i>was fundamental for the design and engagement of the indigenous group...</i> (p.11) (+Tr)	individuals also refused to participate in the interviews... (p.11) (-P)
Nathan and Pasgaard, (2017, Cambodia)	We waited so long to get carbon funding, some of my members feel hopeless... and nothing happens... (p.33) ... the project proved risky... due to false expectations... (p.33) (-Fin) <i>...the main actual on-the-ground activity was to involve local people in forest patrols... may have helped protect the forested areas...</i> (p.32) (+C)	... the committee and members who are active will get benefits... (p.34) (-Eq)	<i>There are many benefits from forest management. Many people can access NTFPs...</i> (p.34) (+P)
Work, (2018, Cambodia)	...not enough money though. It doesn't replace money we can make doing other things, so it's hard to get people to patrol. (p.257) (-Fin)		...if we keep the forest they will help us - if not, they won't. (p.257) (-Vol)
Samndong, (2018, DR Congo)		The relationship between political and economic actors in the DRC are...client-patron relationships... (p.9) These forestry officers supplement their low salaries through bribery and corruption. (p.9) (-Eq)	

972 Appendix 1 cont.

Gauthier, (2018, DR Congo)	... the minimum objective of not aggravating the situation of indigenous peoples ... is not achieved. (p.10) (-C)		... the initiatives pursued will tend to favour the emergence of private actors, reduce the benefits of the poorest people... (p. 10) (-P)
Pelletier et al. (2018, DR Congo)	(Tree planting) could eventually limit land for leasing to landless people who depend on it their livelihoods. (p.112) (-Fin)		
Holmes et al. (2018, Panama)			I am the one weeding my garden in the hot sun... why should the carbon project renovate the community meeting house (p.235) (-Vol)

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