Supporting Information

Payments for ecosystem services did not crowd out pro-environmental behavior: long-term experimental evidence from Uganda

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A Survey Instruments

A.1 Choice of Seedling Package

The measure for pro-environmental behavior, with a particular focus on forest conservation, was experimentally elicited in a choice experiment. Respondents were to choose one of five different tree seedling packages that contained 20 seedlings each. The packages varied the number of eucalyptus and native tree seedlings. The eucalyptus seedlings were a particular hybrid that grows faster and provides high quality timber. Yet, most land owners in the research area know that eucalyptus trees have adverse environmental impacts on ground water levels and soil fertility. Choosing the native seedlings therefore can be considered a pro-environmental choice at the expense of foregoing higher income of eucalyptus trees.
In each village, one respondent was randomly selected and received her or his chosen package by a tree nursery that delivered them to the household or a central point of the village. Prior to taking the decision, respondents were asked a question to verify that they understood this experimental setup. Overall, 97.7 % answered this question correctly. For the remaining 17 respondents, the lottery was explained again in detail. The instructions are provided at the end of this chapter.
In the data analysis, we convert this choice to a quasi-continuous measure that specifies the share of native tree seedlings in the selected package. The distribution is illustrated in Figure S1. The package with native seedlings only was the most common choice, followed by the package with eucalyptus trees only.

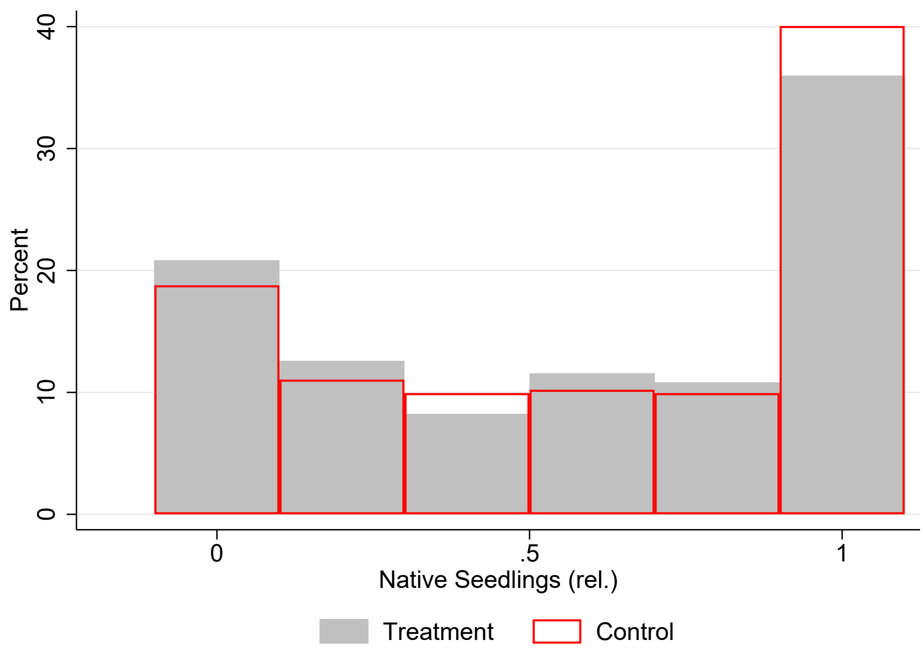

Figure S1: Frequency of Seedling Package Choices (Share of Native Seedlings) by Treatment Status

Using the choice of seedlings as a measure for pro-environmental behavior rests on the assumption that respondents are aware of the environmental damages of eucalyptus and consider native trees as more beneficial for the environment. To verify this, we included two open questions asking for the advantages and disadvantages of native trees over eucalyptus. In order to reduce potential demand effects these question were asked after respondents took the decision for a seedling package.
Table S1 - S3 provide an overview which advantages and disadvantages have been listed by respondents. Besides environmental benefits of maintaining soil fertility (named by 49.75 %) and groundwater levels (42.97 %), a large share of respondents also believe that native trees increase rainfall (78.08 %). Additionally, ecosystem services such as the provision of forest products (66.14 %) and wind protection (39.87 %) were named by substantial shares. Only, 0.16 % indicated that native trees provide no benefits in comparison to eucalyptus trees. Differences between treatment and control villages are not statistically significant for all listed advantages and disadvantages.

Table S1: Frequency of Native Tree Advantages listed by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Keep soils fertile			
No	47.75	52.89	50.25
Yes	52.25	47.11	49.75
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 1.974			
Design-based F(1.00, 748.00) = 1.841			
P-value = 0.175			
Maintain groundwater			
No	57.54	56.50	57.03
Yes	42.46	43.50	42.97
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.083			
Design-based F(1.00, 748.00) = 0.077			
P-value = 0.782			
Increase rainfall			
No	23.03	20.74	21.92
Yes	76.97	79.26	78.08
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.573			
Design-based F(1.00, 748.00) = 0.540			
P-value = 0.463			
Habitat for wild animals			
No	85.67	83.59	84.66
Yes	14.33	16.41	15.34
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.626			
Design-based F(1.00, 748.00) = 0.580			
P-value = 0.446			
Shelter from the wind			
No	61.41	58.78	60.13
Yes	38.59	41.22	39.87
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.538			
Design-based F(1.00, 748.00) = 0.507			
P-value = 0.477			
Provide fruits, firewood and poles			
No	31.23	36.65	33.86
Yes	68.77	63.35	66.14
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 2.448			
Design-based F(1.00, 748.00) = 2.241			
P-value = 0.135			
Provide herbal medicine			
No	74.11	73.89	74.01
Yes	25.89	26.11	25.99
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.005			
Design-based F(1.00, 748.00) = 0.005			
P-value = 0.945			

Table S2: Frequency of Native Tree Advantages listed by Treatment Status (with sampling weights) continued

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Provide food for wild animals (e.g. chimpanzees)			
No	90.86	94.18	92.47
Yes	9.14	5.82	7.53
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 2.969			
Design-based F(1.00, 748.00) = 2.670			
P-value = 0.103			
Fresh/good air			
No	88.56	89.47	89.01
Yes	11.44	10.53	10.99
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.159			
Design-based F(1.00, 748.00) = 0.155			
P-value = 0.694			
High quality timber			
No	92.10	92.40	92.25
Yes	7.90	7.60	7.75
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.024			
Design-based F(1.00, 748.00) = 0.023			
P-value = 0.879			
No advantages			
No	100.00	99.67	99.84
Yes	0.00	0.33	0.16
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 1.289			
Design-based F(1.00, 748.00) = 1.060			
P-value = 0.303			

Table S3: Frequency of Native Tree Disadvantages listed by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Generate lower income			
No	94.68	94.83	94.75
Yes	5.32	5.17	5.25
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.008			
Design-based F(1.00, 716.00) = 0.007			
P-value = 0.932			
Slower growth			
No	71.92	72.06	71.99
Yes	28.08	27.94	28.01
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.002			
Design-based F(1.00, 716.00) = 0.002			
P-value = 0.967			
Attract wild animals			
No	71.80	71.81	71.81
Yes	28.20	28.19	28.19
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.000			
Design-based F(1.00, 716.00) = 0.000			
P-value = 0.999			
Occupy larger space that cannot be cultivated			
No	95.64	96.80	96.20
Yes	4.36	3.20	3.80
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.655			
Design-based F(1.00, 716.00) = 0.573			
P-value = 0.449			
No disadvantages			
No	54.28	57.30	55.74
Yes	45.72	42.70	44.26
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.662			
Design-based F(1.00, 716.00) = 0.617			
P-value = 0.433			

Potential confounding factors that may influence the choice of seedling packages but are unrelated the willingness to forgo financial for environmental benefits may compromise our main outcome. More specifically, respondents may not intend to plant the seedlings but rather sell or gift them to someone else. If native seedlings are in such a case perceived to be more difficult to acquire and/or perceived to be more expensive, respondents may chose native seedlings because of purely monetary reasons. This would be in particular problematic, if respondents in treatment and control villages would have fundamentally different intentions and/or price and availability perceptions. We collected therefore additional information on the intended use (see Table S4). The vast majority stated that they will plant the seedlings themselves (97.48 %), with no statistically significant differences between treatment and control.

Table S4: Frequency of Seedling Use Intentions by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Sole intention to plant seedlings			
Not plant	2.24	2.83	2.52
Intention to plant	97.76	97.17	97.48
Total	100.00	100.00	100.00

Pearson: Uncorrected chi2(1) = 0.265
Design-based F(1.00, 749.00) = 0.218
P-value = 0.641

The perceived difficulty to acquire seedlings is shown in Table S5. Eucalyptus seedlings (common and hybrid varieties) are perceived to be more difficult to acquire than native tree seedlings. There are small differences between treatment and control villages regarding the perceived availability of eucalyptus hybrid seedlings that are significant at the 0.1 level. Besides the availability, we also collected information on the perceived price of different seedlings (see Table S6.). Native species are also perceived to be more expensive than eucalyptus seedlings. Results of linear regression models indicate that perceived prices are not significantly different between treatment and control villages (see Table S7).
Overall, these results indicate that the choice of seedlings seems a valid measure for pro-environmental behavior. Respondents are aware of the environmental damages of eucalyptus and intend to plant the seedlings themselves. Additionally, there are not systematic differences between treatment and control villages concerning the use intentions, and the perceived availability and price of the different tree species.

Table S5: Frequency of Perceived Seedling Availability by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Eucalyptus			
Very difficult	10.07	11.13	10.58
Moderately difficult	15.42	11.86	13.69
Moderately easy	16.51	20.03	18.22
Very easy	58.00	56.99	57.51
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(3) = 3.199			
Design-based F(3.00, 2218.99) = 0.990			
P-value = 0.396			
Eucalyptus Hybrid			
Very difficult	42.84	44.58	43.69
Moderately difficult	21.78	22.86	22.31
Moderately easy	12.70	17.36	14.98
Very easy	22.69	15.21	19.02
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(3) = 8.166			
Design-based F(3.00, 2168.68) = 2.515			
P-value = 0.057			
Musizi			
Very difficult	62.86	58.73	60.85
Moderately difficult	16.69	21.96	19.26
Moderately easy	9.14	10.43	9.77
Very easy	11.31	8.88	10.12
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(3) = 4.438			
Design-based F(3.00, 2143.16) = 1.392			
P-value = 0.244			
Muvule			
Very difficult	74.11	72.93	73.54
Moderately difficult	12.85	15.39	14.09
Moderately easy	6.31	7.20	6.74
Very easy	6.73	4.47	5.63
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(3) = 2.676			
Design-based F(3.00, 2135.97) = 0.851			
P-value = 0.466			

Table S6: Mean, Median and Standard Deviation of Perceived Seedling Prices (in Ugandan Shilling) by Treatment Status (with sampling weights)

	Control mean/p50/sd	Treatment mean/p50/sd	Total mean/p50/sd
Eucalyptus	312.700	283.566	298.715
	200.0	200.0	200.0
	345.773	231.730	296.703
Eucalyptus Hybrid	455.211	432.607	444.345
	400.0	300.0	300.0
	430.407	433.655	431.741
Musizi	572.700	597.400	584.833
	500.0	500.0	500.0
	511.893	549.032	530.107
Muvule	657.087	678.869	667.628
	500.0	500.0	500.0
	600.290	625.054	611.880

Table S7: Regressions for Perceived Seedling Prices

	(1) Eucalyptus	(2) Eucalyptus Hybrid	(3) Musizi	(4) Muvule
Treatment Status	-29.13	-22.60	24.70	21.78
	[-79.920,21.653]	[-106.579,61.370]	[-81.121,130.521]	[-107.602,151.166]
Constant	312.7***	455.2***	572.7***	657.1***
	[270.705,354.696]	[399.993,510.429]	[501.794,643.606]	[572.232,741.942]
N	687	573	536	500
Clusters	119	116	117	114
R2	0.002	0.001	0.001	0.000
Adj. R2	0.001	-0.001	-0.001	-0.002

95% confidence intervals in brackets

Standard errors are clustered at the village level. OLS models.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Instructions: Seedling Experiment

<table>
<tr><td></td><td colspan="2">

In this part of the questionnaire, you have a chance of receiving tree seedlings worth 10,000 UGX. You first have to choose between packages that include different numbers of native and eucalyptus seedlings.

You can choose between the following packages [EXPLAIN EACH PACKAGE ONE BY ONE]:

Package	A	B	C	D	E	F
Eucalyptus Hybrid	20	16	12	8	4	0
Musizi	0	2	4	6	8	10
Muvule	0	2	4	6	8	10

Within this village, a lottery will determine one respondent who will receive his or her preferred package of seedlings. Your chance of winning does not depend on your choice. This lottery will be conducted later by a computer. If you are drawn, we will inform you after the lottery and the seedlings will be delivered to you within 2 weeks.

Do you have any questions?

There are no right or wrong answer here. You can just choose the package that you prefer most.

</td></tr>
<tr><td>2.1</td><td>How many respondents from this village will receive seedlings?</td><td>1 Only 1 respondent → GO TO 2.2
2 More than 1 respondent
-88 Don’t know
-99 Will not say</td></tr>
<tr><td></td><td colspan="2">EXPLAIN AGAIN THE LOTTERY TO THE REPSONDENT</td></tr>
<tr><td>2.2</td><td>Which seedling package do you chose?

In case you win the lottery and receive the seedlings of your choice.</td><td>1 A
2 B
3 C
4 D
5 E
6 F
-99 Will not say</td></tr>
<tr><td>2.3</td><td>What do you intend to do with the seedlings?

[MULTI SELECT]</td><td>1 Plant seedlings myself.
2 Sell to someone else
3 Gift to someone else
-66 Other (specify)
-88 Don’t know
-99 Will not say</td></tr>
<tr><td></td><td colspan="2">I will now ask you some questions about the differences between native and eucalyptus trees.</td></tr>
<tr><td>2.4</td><td>What are the <u>advantages</u> of native trees compared to eucalyptus?</td><td>1 Keep soils fertile
2 Maintain ground water
3 Increase rainfall
4 Home for wild animals
5 Better shelter from the wind
6 Provide fruits, firewood and poles
7 Provide herbal medicine
8 Provide food for wild animals (e.g. chimpanzees)
0 No advantages
-66 Other (specify)
-88 Don’t know
-99 Will not say</td></tr>
<tr><td>2.5</td><td>What are the <u>disadvantages</u> of native trees compared to eucalyptus?</td><td>1 Generate lower income
2 Grow slower
3 Attract wild animals
0 No disadvantages
-66 Other (specify)
-88 Don’t know
-99 Will not say</td></tr>
</table>

	If you would buy seedlings yourself, how much would you pay for <u>one seedling</u>: *Market price for 1 seedling*	__________ UGX -88 Don't know -99 Will not say
2.6	Eucalyptus Hybrid	
2.7	Eucalyptus	
2.8	Musizi	
2.9	Muvule	
	If you would buy seedlings yourself, how difficult would it be to get following seedlings (find a nursery, transport to the nursery, excluding the costs for the seedlings):	1 Very difficult 2 Moderately difficult 3 Moderately easy 4 Very easy -88 Don't know -99 Will not say
2.10	Eucalyptus hybrid	
2.11	Eucalyptus	
2.12	Musizi	
2.13	Muvule	

A.2 Intrinsic Motivation

The degree of intrinsic motivation to plant native instead of eucalyptus trees is measured through an index based on five survey items. We adapted the survey items from Moros et al. (2019) and included one statement for each motivation type (except extrinsic motivations where we distinguish between social sanctions and money). Respondents rated on a 5-point Likert Scale (1 Strongly agree, 2 Agree, 3 Undecided, 4 Disagree, 5 Strongly disagree) agreement with the following statements:

1. Amotivation: Honestly, I don't see any point in planting native instead of eucalyptus trees. (r)
2. Intrinsic: I am satisfied when I plant native instead of eucalyptus trees.
3. Self-Image: I see myself as someone who plants native instead of eucalyptus trees.
4. Personal Value: It is the right thing to plant native instead of eucalyptus trees.
5. Guilt: I feel guilty if I planted eucalyptus instead of native trees.
6. Extrinsic - Social Sanctions: I would be criticized by other people if I planted eucalyptus instead of native trees.
7. Extrinsic - Money: I prefer eucalyptus trees instead of natives ones, because of the higher income they provide. (r)

For the index construction, we excluded purely extrinsic motivations (Statements 6 and 7). Statement 2 - 5 are reversed, so that a higher score indicates a stronger intrinsic/ internalized motivation. Finally, the sum of the answer to Statements 1 - 5 was taken, subtracted by 5 and divided by 20, so that the final index score ranges from 0 to 1. A higher index score indicates a stronger intrinsic or, following the motivation categories of Ryan and Deci (2000), internalized motivation. The internal validity of the index is strong with a Cronbach's Alpha of 0.8066.
The distribution of the intrinsic motivation score is shown in Figure S2. The responses to the individual statements are provided in Table S8.

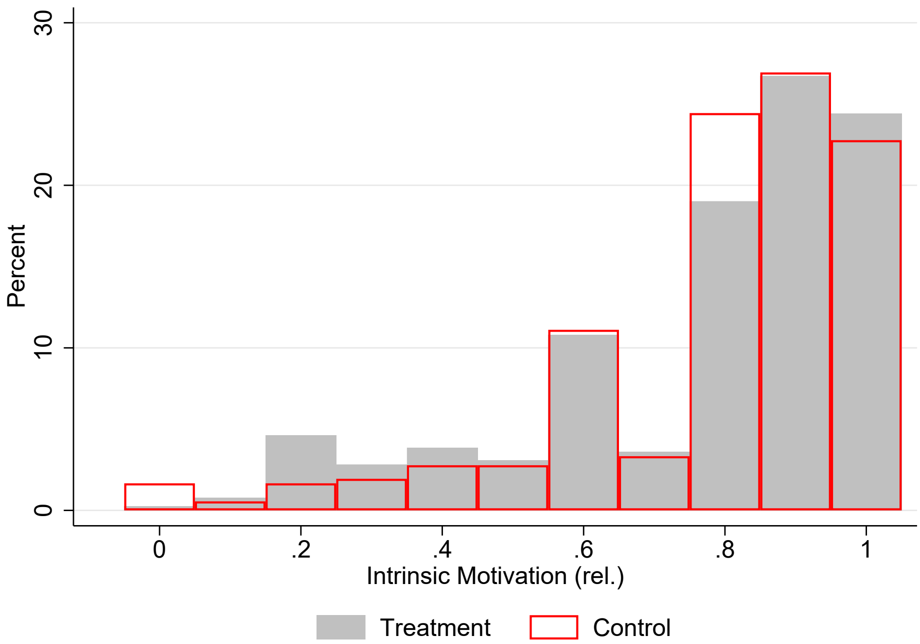

Figure S2: Frequency of Intrinsic Motivation (rel.) Scores by Treatment Status

Table S8: Frequency of Answers to Individual Intrinsic Motivation Statements by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Amotivation			
Strongly agree	10.64	11.77	11.19
Agree	6.56	6.19	6.38
Undecided	2.19	1.79	1.99
Disagree	26.99	29.78	28.34
Strongly disagree	53.63	50.47	52.09
Total	100.00	100.00	100.00
Intrinsic			
Strongly agree	59.15	58.33	58.76
Agree	21.37	27.26	24.23
Undecided	2.83	2.48	2.66
Disagree	13.40	7.61	10.59
Strongly disagree	3.24	4.32	3.76
Total	100.00	100.00	100.00
Self-Image			
Strongly agree	56.59	53.94	55.30
Agree	25.32	30.55	27.87
Undecided	2.49	3.11	2.79
Disagree	12.76	8.30	10.59
Strongly disagree	2.83	4.10	3.45
Total	100.00	100.00	100.00
Personal Values			
Strongly agree	63.88	60.20	62.09
Agree	24.63	30.22	27.35
Undecided	1.73	2.68	2.19
Disagree	6.41	3.78	5.13
Strongly disagree	3.35	3.12	3.24
Total	100.00	100.00	100.00
Guilt			
Strongly agree	40.41	36.59	38.56
Agree	32.74	37.43	35.02
Undecided	3.18	2.03	2.62
Disagree	14.94	16.66	15.78
Strongly disagree	8.73	7.29	8.03
Total	100.00	100.00	100.00
Extrinsic: social sanctions			
Strongly agree	26.31	22.93	24.67
Agree	22.93	27.58	25.19
Undecided	1.29	1.58	1.43
Disagree	30.20	25.76	28.04
Strongly disagree	19.28	22.16	20.67
Total	100.00	100.00	100.00
Extrinsic: money			
Strongly agree	22.95	18.69	20.88
Agree	13.84	22.90	18.24
Undecided	2.07	2.14	2.10
Disagree	34.61	31.01	32.86
Strongly disagree	26.53	25.26	25.91
Total	100.00	100.00	100.00

References

Moros, Lina, María Alejandra Vélez, and Esteve Corbera. 2019. 'Payments for Ecosystem Services and Motivational Crowding in Colombia's Amazon Piedmont'. Ecological Economics 156 (February): 468–88. https://doi.org/10.1016/j.ecolecon.2017.11.032.

Ryan, Richard M, and Edward L Deci. 2000. 'Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being'. American Psychologist, 67.

A.3 Self-Efficacy

The self-efficacy index is based on ten individual items that capture the perceived ability to have a positive impact on the environment, the source of environmental disasters and the individual resources to protect the environment. Respondents rated on a 5-point Likert Scale (1 Strongly agree, 2 Agree, 3 Undecided, 4 Disagree, 5 Strongly disagree) agreement with the following statements:

1. Difference: My individual actions can make a difference to the environment.
2. Influence: I can influence decisions now that will help protect the environment in the future.
3. No Difference: I am only one person, I can't make a difference to the environment. (r)
4. Friend convince: I am not able to convince a friend to protect the environment. (r)
5. Punish God: Environmental disasters such as droughts or floods are a punishment by god. (r)
6. Chance: Environmental disasters such as droughts or floods just happen by chance. (r)
7. Economic: My economic situation does not allow me to protect the environment. (r)
8. Knowledge: I know how I can protect the environment.
9. Skills: I have the necessary skills to protect the environment.
10. No time: I don't have time to protect the environment. (r)

To construct the final index, statements 1, 2, 8 and 9 were reversed. After taking the sum of all answers, subtracted by 10 and divided by 40, the final index ranges from 0 to 1. A higher score indicates a higher perceived self-efficacy with respect to environmental protection. The distribution of index scores by treatment status is shown in Figure S3. The responses to the individual statements are provided in Table S9 and S10. The internal validity of the index measured by Cronbach's Alpha is 0.6202.

Table S9: Frequency of Answers to Individual Self-Efficacy Statements by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Difference			
Strongly agree	63.33	56.48	59.99
Agree	33.56	38.03	35.74
Undecided	0.00	0.23	0.11
Disagree	2.18	4.13	3.13
Strongly disagree	0.94	1.13	1.03
Total	100.00	100.00	100.00
Influence			
Strongly agree	56.33	52.05	54.25
Agree	39.48	44.10	41.73
Undecided	0.49	0.00	0.25
Disagree	3.48	3.44	3.46
Strongly disagree	0.22	0.41	0.31
Total	100.00	100.00	100.00
No difference (r)			
Strongly agree	10.96	11.18	11.07
Agree	15.71	17.55	16.60
Disagree	38.56	42.93	40.68
Strongly disagree	34.77	28.34	31.65
Total	100.00	100.00	100.00
Friend convince (r)			
Strongly agree	9.25	11.83	10.50
Agree	11.52	15.86	13.64
Undecided	0.50	0.69	0.59
Disagree	34.72	33.67	34.21
Strongly disagree	44.01	37.95	41.06
Total	100.00	100.00	100.00
Punish god (r)			
Strongly agree	25.40	23.43	24.44
Agree	20.30	18.14	19.25
Undecided	0.60	0.23	0.42
Disagree	24.42	27.97	26.15
Strongly disagree	29.27	30.22	29.73
Total	100.00	100.00	100.00

Table S10: Frequency of Answers to Individual Self-Efficacy Statements by Treatment Status (with sampling weights) continued

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Chance (r)			
Strongly agree	24.65	26.63	25.61
Agree	32.76	34.36	33.54
Undecided	0.82	0.23	0.53
Disagree	17.90	16.10	17.03
Strongly disagree	23.87	22.68	23.29
Total	100.00	100.00	100.00
Economic (r)			
Strongly agree	18.19	14.50	16.39
Agree	16.33	25.46	20.78
Undecided	0.44	0.71	0.57
Disagree	35.27	30.81	33.10
Strongly disagree	29.77	28.52	29.16
Total	100.00	100.00	100.00
Knowledge			
Strongly agree	44.84	43.14	44.01
Agree	48.94	51.10	49.99
Undecided	0.84	0.69	0.76
Disagree	4.11	4.34	4.22
Strongly disagree	1.28	0.73	1.01
Total	100.00	100.00	100.00
Skills			
Strongly agree	32.22	29.61	30.95
Agree	36.87	38.03	37.43
Undecided	1.23	1.74	1.48
Disagree	23.13	25.25	24.16
Strongly disagree	6.55	5.37	5.98
Total	100.00	100.00	100.00
No time (r)			
Strongly agree	3.67	4.23	3.94
Agree	9.89	10.48	10.18
Undecided	0.22	0.72	0.46
Disagree	41.31	39.32	40.34
Strongly disagree	44.91	45.24	45.07
Total	100.00	100.00	100.00

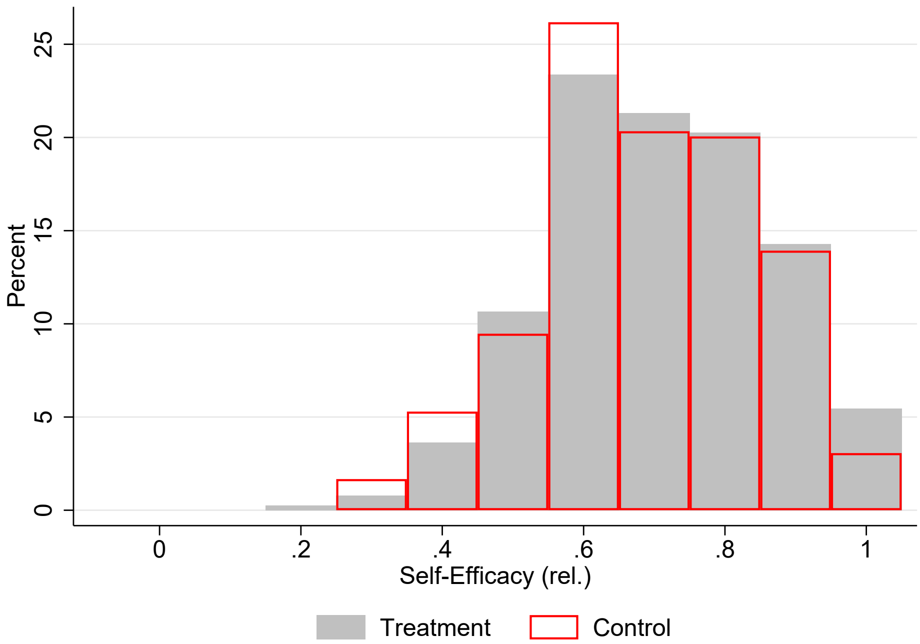

Figure S3: Frequency of Self-Efficacy (rel.) Scores by Treatment Status

A.4 Forest Benefits and Disbenefits

The perceived forest benefits and disbenefits were collected by two open questions. Respondents were asked to list all possible benefits and disbenefits from forests that come to their mind. In order to reduce potential differences between forest owners and non-forest owners, we framed the question with a hypothetical scenario, in which the respondents owns a private forest of 4 ha. The explanation and questions are provided at the end of this sub-chapter.

The index was constructed by simply taking the sum of listed benefits and subtract the sum of listed disbenefits. Categories that were mentioned by less than 5 % of respondents (unweighted observations) were not included as specified in the Pre-Analysis Plan. The index was then standardized so that it ranges from 0 to 1, whereby a higher score indicates more perceived forest benefits. The distribution of index scores by treatment status are shown in Figure S4. The frequency of individual categories listed are provided in Table S11 and S12.

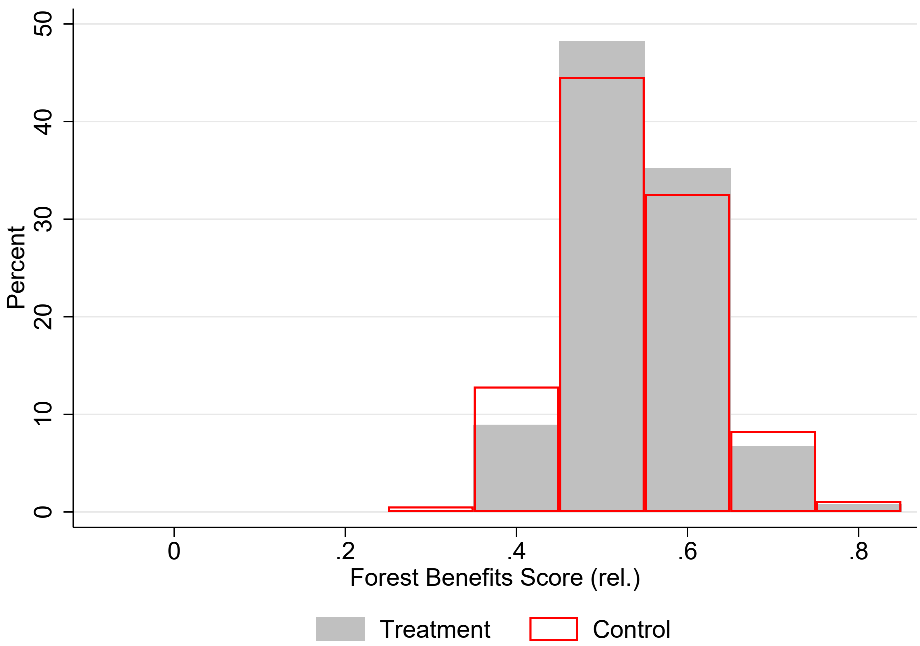

Figure S4: Frequency of Forest Benefits (rel.) Scores by Treatment Status

Table S11: Frequency of Listed Forest Benefits by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Cash Income			
No	46.03	50.83	48.37
Yes	53.97	49.17	51.63
Total	100.00	100.00	100.00
Firewood and poles			
No	9.29	12.87	11.03
Yes	90.71	87.13	88.97
Total	100.00	100.00	100.00
Food such as fruits, mushroom and bush-meat			
No	75.46	76.21	75.82
Yes	24.54	23.79	24.18
Total	100.00	100.00	100.00
Medicine			
No	61.65	60.99	61.33
Yes	38.35	39.01	38.67
Total	100.00	100.00	100.00
Protection from winds			
No	66.25	65.70	65.98
Yes	33.75	34.30	34.02
Total	100.00	100.00	100.00
Protection of drinking water			
No	82.23	83.02	82.61
Yes	17.77	16.98	17.39
Total	100.00	100.00	100.00
Increase rainfall			
No	24.46	21.60	23.07
Yes	75.54	78.40	76.93
Total	100.00	100.00	100.00
Limit soil erosion			
No	83.50	84.94	84.20
Yes	16.50	15.06	15.80
Total	100.00	100.00	100.00
Scenic value			
No	91.47	93.70	92.56
Yes	8.53	6.30	7.44
Total	100.00	100.00	100.00
Habitat for wildlife			
No	73.07	78.20	75.57
Yes	26.93	21.80	24.43
Total	100.00	100.00	100.00
Improved air quality			
No	70.45	70.63	70.54
Yes	29.55	29.37	29.46
Total	100.00	100.00	100.00

Table S12: Frequency of Listed Forest Disbenefits by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Increased crop damages by wildlife on own fields			
No	28.66	24.64	26.70
Yes	71.34	75.36	73.30
Total	100.00	100.00	100.00
Increased crop damages by chimpanzees on own fields			
No	69.36	69.24	69.30
Yes	30.64	30.76	30.70
Total	100.00	100.00	100.00
Conflicts with neighbour about wildlife attracted by the forest			
No	80.44	83.08	81.73
Yes	19.56	16.92	18.27
Total	100.00	100.00	100.00
Conflict with neighbours about firewood and poles			
No	82.82	80.25	81.57
Yes	17.18	19.75	18.43
Total	100.00	100.00	100.00
Attracts timber cutters			
No	88.20	86.97	87.60
Yes	11.80	13.03	12.40
Total	100.00	100.00	100.00
Increased risk for diseases (e.g. malaria, rabies, Ebola)			
No	88.93	90.73	89.81
Yes	11.07	9.27	10.19
Total	100.00	100.00	100.00
Increased risk for crop pests			
No	92.67	95.16	93.88
Yes	7.33	4.84	6.12
Total	100.00	100.00	100.00
Limits land for cultivation			
No	90.50	95.77	93.07
Yes	9.50	4.23	6.93
Total	100.00	100.00	100.00

Instructions: Perceived Forest Benefits and Costs

	Imagine that you own 4 acres of private forest (i.e. roughly the size of 6 football pitches). And imagine that you would keep this forest standing. You would collect firewood, cut small poles as building material and occasionally harvest mature trees for selling, but maintaining the overall forest.	
10.1.	What benefits would this forest provide? Please list all that come to your mind.	1 Generates cash income 2 Provides firewood and poles 3 Provides food such as fruits, mushroom and bush-meat 4 Provides medicine 5 Protects from the wind 6 Protects drinking water 7 Increases rainfall 8 Limits soil erosion 9 Good scenery 10 Home for wild animals 11 Improves air quality/ fresh air -66 Other (specify) -88 Don't know -99 Will not say
10.2	If other, please specify:	
10.3	Which problems would this forest create? Please list all that come to your mind.	1 Increased crop damages by wildlife on own fields 2 Increased crop damages by chimpanzees on own fields 3 Conflicts with neighbour about wildlife attracted by the forest 4 Conflict with neighbours about firewood and poles 5 Attracts timber cutters 6 Increased risk for diseases (e.g. malaria, rabies, Ebola) 7 Increased risk for crop pests 8 Limits land for cultivation -66 Other (specify) -88 Don't know -99 Will not say
10.4	If other, please specify:	

A.5 Environmental Attitudes

The original New Ecological Paradigm Scale is based on 15 individual statements (Dunlap et al. 2000). Respondents were asked to indicate their level of agreement on a 5-point scale. After pre-testing understanding of the individual items, we made adjustments to three statements to ease understanding. These changes are underlined below and the original wording is placed in brackets. Reversed statements are indicated with (r) at the end.

1. We are approaching the limit of the number of people the earth can support.
2. Humans have the right to modify the natural environment to suit their needs. (r)
3. When humans interfere with nature it often produces disastrous consequences.
4. Human <u>cleverness</u> [ingenuity] will insure that we do NOT make the earth unlivable. (r)
5. Humans are severely abusing the environment.
6. The earth has plenty of natural resources if we just learn how to develop them. (r)
7. Plants and animals have as much right as humans to exist.
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations. (r)
9. Despite our special abilities humans are still subject to the laws of nature.
10. The so-called "ecological crisis" that is threating the people, has been greatly exaggerated. (r)
11. The earth is like a <u>small island</u> [spaceship] with very limited room and resources.
12. Humans were meant to rule over the rest of nature. (r)
13. The balance of nature is very delicate and easily upset.
14. Humans will eventually learn enough about how nature works to be able to control it. (r)
15. If things continue <u>in the way they are now</u> [on their present course] we will soon experience a major ecological <u>disaster</u> [catastrophe].

These 15 statements belong each to one of five subscales. These subscales are summarized below in Table S13. As pre-registered, we first checked the internal validity of each individual subscale. Since all subscales have a Cronbach's Alpha below 0.6, we do not consider the NEP scale as a reliable measure of environmental attitudes and thus excluded this outcome from all further analysis.

Table S13: NEP Subscales and Cronbach's Alpha

Subscale	Statements No	Cronbach's Alpha
Limits to Growth	1, 6 (r), 11	0.2481
Anti-Anthropocentrism	2 (r), 7, 12 (r)	0.0046
Balance of Nature	3, 8 (r), 13	0.2044
Ecological Crisis	5, 10 (r), 15	0.1572
Anti-Exemptionalism	4 (r), 9, 14 (r)	0.000

References

Dunlap, Riley E., Kent D. Van Liere, Angela G. Mertig, and Robert Emmet Jones. 2000. 'New Trends in Measuring Environmental Attitudes: Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale'. Journal of Social Issues 56 (3): 425–42. https://doi.org/10.1111/0022-4537.00176.

B Sampling

B.1 Sampling Strategy

The base- and endline study (prior to the introduction of PES in 2011 and 2 years afterwards) included in total 1,166 households that owned forests in 2011. All these households in the treatment villages were in principle eligible for PES. The sampling for the follow-up study had to take 2 aspects into account: a) due to budget constraints were were not able to reinterview all 1,166 households and b) we wanted to conduct sub-sample analysis with households that still own forests and households that don't own forests any more (for example regarding forest use restrictions). The following sampling strategy accounts for these requirements.

1. In a first step, 4 households from each village were randomly sampled to assure that we have at least a minimum number of observations from all villages.
2. In the next step, the remaining households were randomly sampled across villages but stratified by forest ownership at baseline. Households owning 1ha or more at baseline were classified as large forest owners and the remaining ones as small forest owners. This stratification was done to assure sufficient statistical power for sub-sample analysis, in particular to have sufficient observations of respondents still with forests.
3. The target sample for large forest owners was set at 484 households and for small forest owners at 295 households. The number of households sampled across villages was determined by subtracting the number of large and small forest owners that were sampled at the first stage from the overall target. In the end, 291 large and 13 small forest owners were sampled across villages in the second stage.

In some cases it was not possible to reinterview a sampled households. Reasons for that could be that the household permanently migrated, households members passed away or it was impossible to reach the household head or an informed adult of the household. In the latter case, enumerators revisited households twice with the aim to meet and interview someone. In other cases, the household head or another adult in the household (in case the household head was not present) refused to be interviewed. In these cases, enumerators replaced the household with a non-sampled household from the same village. Here, no distinction was made between small and large forest owners due to practical reasons of coordinating the replacement interviews in the field.

B.2 Sampling Weights

Inverse sampling probabilities are used in all reported descriptive statistics and regression results to account for different sampling probabilities of respondents. Due to the multi-stage sampling, the sampling probability depends on several factors:

1. The number of base- and endline households in the same village.
2. Whether a household classifies as large or small forest owner.
3. How many large and small forest owners have been sampled in the first stage of the sampling. This in turns determines the number of remaining large and small forest owners to be sampled at the second stage across villages.

To account for these different factors, we run 100,000 Monte Carlo Simulations to derive individual sampling probabilities. The simulation hereby applies the consecutive sampling stages to generate 100,000 random samples.

B.3 Covariate Balance

Table S14: Socio-economic sample characterstics and balance: Baseline

Variable	N	(1) Control Mean/SD	N	(2) Treatment Mean/SD	N	(3) Total Mean/SD	T-test Difference (1)-(2)
Household head's age	390	47.313 (15.039)	363	48.334 (14.363)	753	47.811 (14.708)	-1.022
Household head's years of education	390	8.045 (4.527)	363	7.964 (4.146)	753	8.006 (4.341)	0.081
HH owns, rents, squats on, uses or borrows some land	390	0.993 (0.085)	363	0.995 (0.088)	753	0.994 (0.087)	-0.003
Self-reported land area (ha)	389	10.384 (29.648)	363	11.601 (40.579)	752	10.978 (35.460)	-1.217
Self-reported forest area (ha)	390	2.146 (12.133)	363	1.670 (3.008)	753	1.914 (8.896)	0.476
Cut any trees in the last 3 years	389	0.856 (0.376)	362	0.850 (0.383)	751	0.853 (0.379)	0.006
Rented any part of land	390	0.200 (0.409)	363	0.154 (0.367)	753	0.178 (0.390)	0.046
Had dispute with neighbor about land	390	0.225 (0.424)	363	0.235 (0.432)	753	0.230 (0.428)	-0.009
Tree cover in PFO land circle (ha)	327	4.176 (9.490)	310	4.938 (24.207)	637	4.553 (18.418)	-0.762
IHS of total revenue from cut trees	389	2.479 (2.597)	362	2.281 (2.496)	751	2.382 (2.546)	0.198
IHS of food expend. in last 30 days	377	3.670 (0.973)	343	3.461 (0.949)	720	3.568 (0.966)	0.209***
IHS of non-food expend. in last 30 days	377	4.605 (1.240)	343	4.532 (1.173)	720	4.570 (1.207)	0.074
SES Index Baseline	388	-0.032 (0.954)	363	-0.003 (0.985)	751	-0.018 (0.969)	-0.029
F-test of joint significance (F-stat)							2.871***
F-test, number of observations							609

Notes: The value displayed for t-tests are the differences in the means across the groups. The value displayed for F-tests are the F-statistics. Observations are weighted using variable inv_prob_allland as pweight weights.***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table S15: Socio-economic sample characterstics and balance: Follow-up

Variable	N	(1) Control Mean/SD	N	(2) Treatment Mean/SD	N	(3) Total Mean/SD	T-test Difference (1)-(2)
HH Head	390	0.862 (0.358)	363	0.854 (0.375)	753	0.858 (0.366)	0.008
Age (years)	389	51.091 (14.804)	361	52.148 (14.606)	750	51.606 (14.702)	-1.057
Gender: Female	390	0.230 (0.437)	363	0.271 (0.466)	753	0.250 (0.452)	-0.041
Education (years)	389	6.917 (4.519)	362	6.802 (4.371)	751	6.861 (4.445)	0.115
Adults in HH	390	4.068 (2.304)	362	3.755 (2.235)	752	3.916 (2.273)	0.314*
Children in HH	390	4.095 (3.165)	362	3.826 (2.590)	752	3.964 (2.893)	0.269
HH members	390	8.163 (4.455)	362	7.581 (3.853)	752	7.880 (4.170)	0.583*
HH-Head: Female	390	0.124 (0.341)	363	0.137 (0.358)	753	0.130 (0.350)	-0.012
HH-Head: Education (years)	381	7.135 (4.610)	354	7.084 (4.400)	735	7.110 (4.506)	0.051
SES Index	389	0.020 (1.043)	360	-0.002 (0.992)	749	0.009 (1.018)	0.022
Land Ownership(y/n)	389	0.995 (0.066)	361	0.995 (0.086)	750	0.995 (0.076)	-0.000
No of land pieces	387	1.768 (1.124)	357	1.732 (1.055)	744	1.751 (1.090)	0.036
Land area (ha)	380	7.277 (10.159)	354	8.099 (17.037)	734	7.678 (13.977)	-0.822
Forest Ownership (y/n)	387	0.534 (0.515)	358	0.500 (0.519)	745	0.518 (0.518)	0.034
Forest area (ha)	384	0.540 (1.193)	355	0.516 (1.140)	739	0.528 (1.167)	0.024
Forest Cover (%)	377	0.085 (0.127)	352	0.082 (0.135)	729	0.083 (0.131)	0.002
Mature Forest Ownership (y/n)	386	0.386 (0.500)	358	0.397 (0.506)	744	0.391 (0.502)	-0.012
Mature Forest area (ha)	385	0.401 (0.925)	355	0.458 (1.132)	740	0.429 (1.031)	-0.057
Mature Forest Cover (%)	377	0.060 (0.114)	352	0.068 (0.128)	729	0.064 (0.121)	-0.008
Planted Woodlot (y/n)	385	0.380 (0.500)	357	0.434 (0.514)	742	0.407 (0.507)	-0.054
Woodlot area (ha)	385	0.401 (2.788)	354	0.286 (0.705)	739	0.345 (2.050)	0.115
F-test of joint significance (F-stat)							2.268***
F-test, number of observations							704

Notes: The value displayed for t-tests are the differences in the means across the groups. The value displayed for F-tests are the F-statistics. Observations are weighted using variable inv_prob_allland as pweight weights.***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

C Robustness Checks

This chapter reports a number of additional robustness checks. Table S16 - S20 includes the regression models for testing the main hypotheses from the article. Additional models are reported without enumerator fixed effects and without additional control variables that were used as stratification variables during the treatment randomization of the randomized control trial.
The same robustness checks are reported for the regression models where the main outcome (seedling choice) is regressed on the secondary outcomes in Table S21 - S24. Overall, all results are robust to these additional model specifications.

Table S16: Robustness Checks - Hypothesis 1 - DV: Share of Native Seedlings (rel.)

	(1)	(2)	(3)	(4)
Treatment	0.052	0.084	0.053	0.080
	[-0.094,0.198]	[-0.064,0.232]	[-0.111,0.217]	[-0.084,0.245]
NO of private forest owners (strat.)	0.008	0.008		
	[-0.007,0.022]	[-0.005,0.022]		
Avg. weekly per capita income (strat.)	-0.000**	-0.000**		
	[-0.000,-0.000]	[-0.000,-0.000]		
Distance to major road (strat.)	-0.003	-0.010		
	[-0.071,0.065]	[-0.078,0.058]		
Average reported land size (strat.)	0.009**	0.009***		
	[0.001,0.017]	[0.002,0.016]		
Constant	0.421*	0.460***	0.647***	0.683***
	[-0.001,0.844]	[0.204,0.715]	[0.244,1.049]	[0.577,0.788]
var(e.choice_seedlings_rel)	0.674***	0.703***	0.705***	0.730***
	[0.557,0.790]	[0.583,0.822]	[0.581,0.830]	[0.602,0.858]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	751	751	751	751
Clusters	119	119	119	119
F-Statistic	39.229	2.839	35.369	0.919
p	0.000	0.001	0.000	0.338
Pseudo R-Squared	0.031	0.016	0.013	0.001

95% confidence intervals in brackets
Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.
Observations are weighted by the inverse sampling probabilities.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The PES intervention may have altered also external constraints for planting native and eucalyptus tree seedling such as the availability and price of native seedlings. As additional control variables we therefore include in Table S17: a) the self-reported price ratio of native and eucalyptus seedlings. Ratios below 1 indicate higher prices for eucalyptus, and above 1, higher prices for native seedlings; b) the self-reported availability measured on a 4-point Likert scale. Again, ratios below 1 indicate that eucalyptus seedlings are more difficult to get and above 1 that native seedlings are more difficult to get; c) the self-reported intention whether to plant seedlings themselves, or sell or gift them to someone else. Among these control variables, only the price ratio has a statistically significant effect on the choice of seedlings. Stating a perceived price ratio above 1 increases the share of native seedlings by 0.472 compared to respondents who stated a price ratio below 1.

Table S17: Robustness Checks - Hypothesis 1 with additional controls - DV: Share of Native Seedlings (rel.)

	(1)	(2)	(3)	(4)
Treatment	0.036	0.055	0.046	0.061
	[-0.108,0.180]	[-0.089,0.199]	[-0.110,0.202]	[-0.097,0.218]
Price ratio = 1	0.113	0.110	0.115	0.120
	[-0.171,0.397]	[-0.177,0.396]	[-0.168,0.399]	[-0.166,0.407]
Price ratio > 1	0.459***	0.433***	0.472***	0.448***
	[0.232,0.687]	[0.200,0.667]	[0.247,0.698]	[0.220,0.676]
Price ratio NA	0.036	0.069	0.048	0.089
	[-0.260,0.331]	[-0.179,0.318]	[-0.243,0.339]	[-0.159,0.337]
Avail. ratio = 1	-0.145	-0.160	-0.130	-0.158
	[-0.356,0.065]	[-0.371,0.051]	[-0.349,0.090]	[-0.378,0.061]
Avail. ratio > 1	-0.197*	-0.186	-0.186	-0.179
	[-0.427,0.033]	[-0.413,0.042]	[-0.418,0.045]	[-0.407,0.049]
Avail. ratio NA	-0.130	-0.110	-0.138	-0.119
	[-0.437,0.177]	[-0.423,0.203]	[-0.449,0.174]	[-0.435,0.197]
Intention to plant	-0.178	-0.294	-0.110	-0.222
	[-0.587,0.231]	[-0.650,0.062]	[-0.531,0.312]	[-0.598,0.155]
NO of private forest owners (strat.)	0.009	0.008		
	[-0.005,0.023]	[-0.005,0.022]		
Avg. weekly per capita income (strat.)	-0.000**	-0.000**		
	[-0.000,-0.000]	[-0.000,-0.000]		
Distance to major road (strat.)	0.011	0.005		
	[-0.053,0.075]	[-0.059,0.070]		
Average reported land size (strat.)	0.010**	0.010***		
	[0.002,0.019]	[0.003,0.017]		
Constant	0.518	0.617**	0.748**	0.830***
	[-0.115,1.151]	[0.123,1.110]	[0.079,1.418]	[0.371,1.290]
var(e.choice_seedlings_rel)	0.624***	0.653***	0.654***	0.680***
	[0.515,0.733]	[0.543,0.763]	[0.537,0.771]	[0.562,0.798]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	741	741	741	741
Clusters	118	118	118	118
F-Statistic	35.710	3.808	33.144	4.460
p	0.000	0.000	0.000	0.000
Pseudo R-Squared	0.052	0.037	0.033	0.020

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S18: Robustness Checks - Hypothesis 2 - DV: Intrinsic Motivation Score (rel.)

	(1)	(2)	(3)	(4)
Treatment	0.009	-0.002	0.013	0.000
	[-0.036,0.055]	[-0.047,0.043]	[-0.036,0.061]	[-0.047,0.047]
NO of private forest owners (strat.)	0.001	0.001		
	[-0.003,0.005]	[-0.003,0.005]		
Avg. weekly per capita income (strat.)	-0.000	-0.000		
	[-0.000,0.000]	[-0.000,0.000]		
Distance to major road (strat.)	-0.001	-0.002		
	[-0.021,0.019]	[-0.022,0.017]		
Average reported land size (strat.)	0.001	0.000		
	[-0.001,0.003]	[-0.002,0.002]		
Constant	0.760***	0.750***	0.836***	0.821***
	[0.650,0.870]	[0.686,0.815]	[0.753,0.919]	[0.789,0.854]
var(e.sum_int_motivation_rel)	0.061***	0.074***	0.064***	0.076***
	[0.050,0.072]	[0.062,0.086]	[0.052,0.075]	[0.063,0.088]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	749	749	749	749
Clusters	119	119	119	119
F-Statistic	310.704	3.235	9.334	0.000
p	0.000	0.000	0.000	0.999
Pseudo R-Squared	0.337	0.032	0.286	0.000

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S19: Robustness Checks - Hypothesis 3 - DV: Self-Efficacy Score (rel.)

	(1)	(2)	(3)	(4)
Treatment	-0.005	-0.023	-0.003	-0.019
	[-0.024,0.014]	[-0.051,0.004]	[-0.022,0.016]	[-0.047,0.009]
NO of private forest owners (strat.)	0.001	-0.000		
	[-0.001,0.003]	[-0.003,0.002]		
Avg. weekly per capita income (strat.)	-0.000	-0.000		
	[-0.000,0.000]	[-0.000,0.000]		
Distance to major road (strat.)	0.004	0.011*		
	[-0.004,0.012]	[-0.001,0.023]		
Average reported land size (strat.)	-0.000	-0.001		
	[-0.002,0.001]	[-0.002,0.001]		
Constant	0.526***	0.686***	0.548***	0.708***
	[0.461,0.591]	[0.645,0.728]	[0.506,0.590]	[0.686,0.729]
var(e.self_eff_score_rel)	0.014***	0.023***	0.014***	0.023***
	[0.012,0.015]	[0.020,0.026]	[0.012,0.015]	[0.020,0.026]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	744	744	744	744
Clusters	119	119	119	119
F-Statistic	92.400	1.229	163.444	1.696
p	0.000	0.263	0.000	0.193
Pseudo R-Squared	-0.676	-0.027	-0.664	-0.005

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S20: Robustness Checks - Hypothesis 4 - DV: Forest Benefits Score (rel.)

	(1)	(2)	(3)	(4)
Treatment	0.002	-0.007	0.002	-0.005
	[-0.007,0.011]	[-0.020,0.006]	[-0.007,0.012]	[-0.019,0.010]
NO of private forest owners (strat.)	0.000	0.001		
	[-0.001,0.001]	[-0.001,0.002]		
Avg. weekly per capita income (strat.)	0.000	-0.000		
	[-0.000,0.000]	[-0.000,0.000]		
Distance to major road (strat.)	0.000	0.003		
	[-0.004,0.005]	[-0.003,0.009]		
Average reported land size (strat.)	0.000	0.000		
	[-0.000,0.001]	[-0.001,0.002]		
Constant	0.472***	0.535***	0.471***	0.546***
	[0.440,0.505]	[0.511,0.559]	[0.451,0.491]	[0.536,0.555]
var(e.forest_diff_benefits_rel)	0.005***	0.007***	0.005***	0.007***
	[0.004,0.005]	[0.006,0.007]	[0.004,0.005]	[0.006,0.007]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	719	719	719	719
Clusters	118	118	118	118
F-Statistic	973.974	1.476	16.971	0.417
p	0.000	0.136	0.000	0.519
Pseudo R-Squared	-0.178	-0.009	-0.171	-0.000

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S21: Robustness Checks - Channels - DV: Share of Native Seedlings (rel.)

	(1)	(2)	(3)	(4)
Intrinsic Motivation (rel.)	1.700***	1.478***	1.742***	1.498***
	[1.386,2.014]	[1.199,1.756]	[1.431,2.053]	[1.223,1.773]
NO of private forest owners (strat.)	0.007	0.008		
	[-0.004,0.019]	[-0.004,0.020]		
Avg. weekly per capita income (strat.)	-0.000***	-0.000**		
	[-0.000,-0.000]	[-0.000,-0.000]		
Distance to major road (strat.)	0.006	0.004		
	[-0.046,0.058]	[-0.053,0.061]		
Average reported land size (strat.)	0.007**	0.008***		
	[0.001,0.013]	[0.003,0.014]		
Constant	-0.851***	-0.631***	-0.730***	-0.464***
	[-1.317,-0.386]	[-0.924,-0.338]	[-1.194,-0.266]	[-0.687,-0.240]
var(e.choice_seedlings_rel)	0.538***	0.580***	0.556***	0.600***
	[0.445,0.632]	[0.481,0.679]	[0.459,0.654]	[0.495,0.706]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	748	748	748	748
Clusters	119	119	119	119
F-Statistic	50.768	12.575	45.031	114.125
p	0.000	0.000	0.000	0.000
Pseudo R-Squared	0.110	0.083	0.096	0.070

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S22: Robustness Checks - Channels - DV: Share of Native Seedlings (rel.)

	(1)	(2)	(3)	(4)
Self-Efficacy (rel.)	1.162***	0.697***	1.150***	0.659***
	[0.635,1.689]	[0.251,1.143]	[0.630,1.671]	[0.214,1.105]
NO of private forest owners (strat.)	0.006	0.008		
	[-0.010,0.021]	[-0.007,0.023]		
Avg. weekly per capita income (strat.)	-0.000*	-0.000**		
	[-0.000,0.000]	[-0.000,-0.000]		
Distance to major road (strat.)	-0.002	-0.011		
	[-0.068,0.063]	[-0.077,0.055]		
Average reported land size (strat.)	0.010**	0.010***		
	[0.000,0.020]	[0.003,0.017]		
Constant	-0.172	0.014	0.044	0.260
	[-0.627,0.284]	[-0.360,0.389]	[-0.425,0.512]	[-0.070,0.590]
var(e.choice_seedlings_rel)	0.648***	0.684***	0.679***	0.711***
	[0.535,0.761]	[0.566,0.802]	[0.558,0.799]	[0.586,0.837]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	743	743	743	743
Clusters	119	119	119	119
F-Statistic	35.443	2.873	34.415	8.452
p	0.000	0.001	0.000	0.004
Pseudo R-Squared	0.041	0.021	0.023	0.005

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S23: Robustness Checks - Channels - DV: Share of Native Seedlings (rel.)

	(1)	(2)	(3)	(4)
Forest Benefits Score (rel.)	1.388***	0.780*	1.482***	0.936**
	[0.437,2.339]	[-0.062,1.622]	[0.527,2.437]	[0.087,1.785]
NO of private forest owners (strat.)	0.009	0.010		
	[-0.006,0.024]	[-0.006,0.025]		
Avg. weekly per capita income (strat.)	-0.000**	-0.000**		
	[-0.000,-0.000]	[-0.000,-0.000]		
Distance to major road (strat.)	0.001	-0.003		
	[-0.068,0.070]	[-0.074,0.067]		
Average reported land size (strat.)	0.008**	0.008**		
	[0.000,0.016]	[0.002,0.015]		
Constant	-0.245	0.037	-0.021	0.214
	[-0.805,0.316]	[-0.472,0.545]	[-0.605,0.563]	[-0.264,0.692]
var(e.choice_seedlings_rel)	0.650***	0.688***	0.680***	0.715***
	[0.537,0.764]	[0.570,0.806]	[0.559,0.802]	[0.588,0.841]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	718	718	718	718
Clusters	118	118	118	118
F-Statistic	38.451	2.746	37.366	4.690
p	0.000	0.002	0.000	0.031
Pseudo R-Squared	0.038	0.018	0.021	0.003

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S24: Robustness Checks - Channels - DV: Share of Native Seedlings (rel.)

	(1)	(2)	(3)	(4)
Intrinsic Motivation (rel.)	1.711***	1.524***	1.757***	1.548***
	[1.370,2.053]	[1.227,1.821]	[1.419,2.094]	[1.255,1.841]
Self-Efficacy (rel.)	0.331	-0.049	0.315	-0.079
	[-0.219,0.881]	[-0.489,0.390]	[-0.223,0.854]	[-0.519,0.360]
Forest Benefits Score (rel.)	0.531	0.204	0.610	0.348
	[-0.413,1.475]	[-0.602,1.009]	[-0.312,1.532]	[-0.456,1.151]
NO of private forest owners (strat.)	0.006	0.007		
	[-0.006,0.018]	[-0.006,0.020]		
Avg. weekly per capita income (strat.)	-0.000**	-0.000**		
	[-0.000,-0.000]	[-0.000,-0.000]		
Distance to major road (strat.)	0.010	0.009		
	[-0.044,0.064]	[-0.051,0.069]		
Average reported land size (strat.)	0.007**	0.008***		
	[0.000,0.013]	[0.002,0.013]		
Constant	-1.315***	-0.755***	-1.222***	-0.643**
	[-1.894,-0.736]	[-1.285,-0.224]	[-1.834,-0.611]	[-1.172,-0.113]
var(e.choice_seedlings_rel)	0.510***	0.559***	0.526***	0.578***
	[0.421,0.598]	[0.464,0.654]	[0.434,0.619]	[0.476,0.680]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	709	709	709	709
Clusters	118	118	118	118
F-Statistic	48.397	10.791	41.913	38.044
p	0.000	0.000	0.000	0.000
Pseudo R-Squared	0.121	0.088	0.108	0.075

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

D Spillover Effects

D.1 Description

To check for potential spillovers between treatment and control villages, we run two regression models. We consider spillovers effects more likely in close vicinity to treatment villages as they likely occur only if close and frequent interactions between villagers exist. Following Jayachandran et al. (2017), we consider a 5 kilometer radius as a potential area for spillover effects. Table S25 and S26 summarize the distribution of the number of control villages within a 5 km radius at the respondent and village level. On average, respondents from the control group have 6.3 treatment villages within 5km, (Median = 6, SD = 3.18, weighted by inverse sampling probabilities).

One regression model, includes a continuous measure of the number of treatment villages within a 5 km radius as independent variable. A second model covers all villages and includes a binary dummy variable that indicates if a control village has 6 or more treatment villages in close proximity (5km radius). While we report regression results for the main outcome in the article, the subsection D.2 also provides spillovers analyses for the secondary outcomes. In addition, we provide robustness checks (without enumerator fixed effects and stratification controls) for the models provided in the main article in subsection D.3.

Table S25: Frequency and Share of Respondents with Treatment Villages in Close Vicinity (5km), control group only

	Count	%
# of treatment villages within 5km		
0	5	1.28
1	10	2.56
2	44	11.28
3	22	5.64
4	50	12.82
5	44	11.28
6	25	6.41
7	48	12.31
8	41	10.51
9	27	6.92
10	14	3.59
11	30	7.69
12	21	5.38
13	9	2.31
Total	390	100.00

Table S26: Frequency and Share of Control Villages with Treatment Villages in Close Vicinity (5km)

	Count	%
# of treatment villages within 5km		
0	1	1.64
1	2	3.28
2	6	9.84
3	4	6.56
4	7	11.48
5	7	11.48
6	5	8.20
7	8	13.11
8	5	8.20
9	3	4.92
10	4	6.56
11	4	6.56
12	3	4.92
13	2	3.28
Total	61	100.00

References

Jayachandran, Seema, Joost de Laat, Eric F. Lambin, Charlotte Y. Stanton, Robin Audy, and Nancy E. Thomas. 2017. 'Cash for Carbon: A Randomized Trial of Payments for Ecosystem Services to Reduce Deforestation'. Science 357 (6348): 267–73. https://doi.org/10.1126/science.aan0568.

D.2 Secondary Outcomes

Table S27: Spillover Analysis - Secondary Outcomes - Control Group Only

	(1) Int. Motivation	(2) Self-Efficacy	(3) Forest Benefits
# of treatment villages within 5km	0.005 [-0.006,0.016]	-0.004 [-0.010,0.003]	-0.001 [-0.004,0.001]
NO of private forest owners (strat.)	-0.001 [-0.007,0.005]	0.003 [-0.001,0.006]	0.000 [-0.002,0.002]
Avg. weekly per capita income (strat.)	0.000 [-0.000,0.000]	-0.000 [-0.000,0.000]	0.000 [-0.000,0.000]
Distance to major road (strat.)	-0.027* [-0.057,0.003]	-0.003 [-0.018,0.012]	0.002 [-0.007,0.011]
Average reported land size (strat.)	0.002* [-0.000,0.003]	0.000 [-0.001,0.001]	0.000* [-0.000,0.001]
Constant	0.727*** [0.552,0.902]	0.483*** [0.396,0.570]	0.471*** [0.417,0.525]
var(e.sum_int_motivation_rel)	0.056*** [0.043,0.069]		
var(e.self_eff_score_rel)		0.013*** [0.011,0.016]	
var(e.forest_diff_benefits_rel)			0.004*** [0.004,0.005]
Enumerator FE	Yes	Yes	Yes
Subcounty FE	Yes	Yes	Yes
N	389	385	369
Clusters	61	61	60
F-Statistic	19.307	97.587	11.523
p	0.000	0.000	0.000
Pseudo R-Squared	0.487	-0.839	-0.152

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S28: Spillover Analysis - Secondary Outcomes

	(1) Int. Motivation	(2) Self-Efficacy	(3) Forest Benefits
Treatment	0.029	0.008	0.001
	[-0.022,0.080]	[-0.017,0.033]	[-0.013,0.015]
Control (>5 treatment villages in 5km)	0.034	0.023	-0.002
	[-0.025,0.093]	[-0.008,0.054]	[-0.018,0.014]
NO of private forest owners (strat.)	0.001	0.001	0.000
	[-0.004,0.005]	[-0.001,0.003]	[-0.001,0.001]
Avg. weekly per capita income (strat.)	0.000	-0.000	0.000
	[-0.000,0.000]	[-0.000,0.000]	[-0.000,0.000]
Distance to major road (strat.)	-0.002	0.003	0.001
	[-0.022,0.018]	[-0.005,0.011]	[-0.004,0.005]
Average reported land size (strat.)	0.001	-0.000	0.000
	[-0.001,0.003]	[-0.002,0.001]	[-0.000,0.001]
Constant	0.751***	0.521***	0.473***
	[0.640,0.862]	[0.457,0.584]	[0.439,0.506]
var(e.sum_int_motivation_rel)	0.061***		
	[0.050,0.072]		
var(e.self_eff_score_rel)		0.014***	
		[0.012,0.015]	
var(e.forest_diff_benefits_rel)			0.005***
			[0.004,0.005]
Enumerator FE	Yes	Yes	Yes
Subcounty FE	Yes	Yes	Yes
N	749	744	719
Clusters	119	119	118
F-Statistic	228.912	80.574	992.247
p	0.000	0.000	0.000
Pseudo R-Squared	0.339	-0.680	-0.178

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

D.3 Robustness Checks

Table S29: Robustness Checks - Spillover Effects - Control Villages Only

	(1)	(2)	(3)	(4)
# of treatment villages within 5km	-0.015	-0.029	-0.020	-0.024
	[-0.055,0.025]	[-0.069,0.012]	[-0.048,0.009]	[-0.053,0.005]
NO of private forest owners (strat.)	0.007	0.012		
	[-0.014,0.027]	[-0.007,0.031]		
Avg. weekly per capita income (strat.)	-0.000	-0.000		
	[-0.000,0.000]	[-0.000,0.000]		
Distance to major road (strat.)	-0.043	-0.025		
	[-0.157,0.071]	[-0.146,0.097]		
Average reported land size (strat.)	0.007**	0.011***		
	[0.000,0.014]	[0.005,0.016]		
Constant	0.364	0.364*	0.767***	0.833***
	[-0.315,1.042]	[-0.069,0.796]	[0.197,1.338]	[0.604,1.061]
var(e.choice_seedlings_rel)	0.606***	0.667***	0.632***	0.693***
	[0.459,0.753]	[0.509,0.825]	[0.475,0.790]	[0.524,0.862]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	389	389	389	389
Clusters	61	61	61	61
F-Statistic	6.293	2.403	3.956	2.687
p	0.000	0.007	0.000	0.102
Pseudo R-Squared	0.053	0.019	0.036	0.003

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S30: Robustness Checks - Spillover Effects - All Villages

	(1)	(2)	(3)	(4)
Treatment	-0.066	-0.034	-0.016	0.006
	[-0.260,0.129]	[-0.227,0.159]	[-0.230,0.198]	[-0.208,0.219]
Control (>5 treatment villages in 5km)	-0.199	-0.204*	-0.120	-0.133
	[-0.440,0.042]	[-0.445,0.038]	[-0.332,0.091]	[-0.346,0.080]
NO of private forest owners (strat.)	0.009	0.009		
	[-0.005,0.023]	[-0.004,0.022]		
Avg. weekly per capita income (strat.)	-0.000**	-0.000**		
	[-0.000,-0.000]	[-0.000,-0.000]		
Distance to major road (strat.)	0.003	-0.005		
	[-0.064,0.070]	[-0.072,0.063]		
Average reported land size (strat.)	0.009**	0.009***		
	[0.002,0.017]	[0.003,0.016]		
Constant	0.472**	0.505***	0.715***	0.757***
	[0.025,0.919]	[0.238,0.772]	[0.280,1.150]	[0.588,0.927]
var(e.choice_seedlings_rel)	0.670***	0.698***	0.703***	0.727***
	[0.553,0.787]	[0.578,0.819]	[0.578,0.828]	[0.599,0.856]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	Yes	No	No
N	751	751	751	751
Clusters	119	119	119	119
F-Statistic	36.541	3.190	33.739	1.357
p	0.000	0.000	0.000	0.258
Pseudo R-Squared	0.033	0.018	0.014	0.002

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

E Self-Reported Tree Planting

Descriptives

Detailed information on self-reported tree planting within the past 12 months was collected. This section includes a brief summary of the findings and treatment effect analysis. Overall, 35.51 % of respondents have planted trees in the past 12 months prior to the survey (see Table S31). There is a statistically significant difference between treatment and control villages. Respondents in treatment villages are more than 9 percentage points less likely to have planted any trees. The share of respondents who have planted however native trees is substantially lower (12.47 %) and differences between treatment and control are much smaller and are not statistically significant. This indicates that respondents from control villages only engaged in more eucalyptus planting.
The majority of planted trees are eucalyptus (47.97 % of respondents who planted trees planted mostly eucalyptus) followed by native tree species (35.58 %). There are no systematic differences regarding the planted tree species between treatment and control. The reported reasons for planting trees are diverse and range from environmental conservation to increasing cash income (see Table S32). The respondents who have reported tree planting mostly bought tree seedlings (45.28 %), while other produced seedlings themselves (23 %) or received them from NGOs (26.9 %) (see Table S33).

Table S31: Self-Reported Tree Planting Behavior in the past 12 months by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Tree Planting (y/n)			
No	60.04	69.19	64.49
Yes	39.96	30.81	35.51
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 6.863			
Design-based F(1.00, 751.00) = 6.436			
P-value = 0.011			
Native Tree Planting (y/n)			
No	87.25	87.81	87.53
Yes	12.75	12.19	12.47
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.053			
Design-based F(1.00, 751.00) = 0.049			
P-value = 0.825			
Most planted species			
Eucalyptus	49.11	46.41	47.97
Pine	2.80	3.83	3.24
Native species	32.25	40.16	35.58
Fruit tree	10.13	6.48	8.59
Other	5.71	3.13	4.62
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(4) = 3.376			
Design-based F(3.96, 1046.58) = 0.738			
P-value = 0.565			

Table S32: Self-Reported Reasons to Plant Trees by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Env. Conservation			
No	41.58	40.45	41.10
Yes	58.42	59.55	58.90
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.035			
Design-based F(1.00, 268.00) = 0.033			
P-value = 0.857			
Savings			
No	86.33	77.82	82.74
Yes	13.67	22.18	17.26
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 3.334			
Design-based F(1.00, 268.00) = 3.152			
P-value = 0.077			
Forest Products (timber/ non-timber)			
No	54.03	50.42	52.51
Yes	45.97	49.58	47.49
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.344			
Design-based F(1.00, 268.00) = 0.322			
P-value = 0.571			
Cash Income			
No	54.13	50.33	52.53
Yes	45.87	49.67	47.47
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.381			
Design-based F(1.00, 268.00) = 0.357			
P-value = 0.551			
Boundary Demarcation			
No	85.89	87.78	86.69
Yes	14.11	12.22	13.31
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.202			
Design-based F(1.00, 268.00) = 0.171			
P-value = 0.680			
Ecosystem Services			
No	95.98	98.49	97.04
Yes	4.02	1.51	2.96
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 1.436			
Design-based F(1.00, 268.00) = 1.553			
P-value = 0.214			

Table S33: Self-Reported Source of Tree Seedling by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Bought			
No	52.64	57.58	54.72
Yes	47.36	42.42	45.28
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.648			
Design-based F(1.00, 268.00) = 0.609			
P-value = 0.436			
Own			
No	75.95	78.44	77.00
Yes	24.05	21.56	23.00
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.229			
Design-based F(1.00, 268.00) = 0.226			
P-value = 0.635			
Free from village			
No	96.00	94.31	95.29
Yes	4.00	5.69	4.71
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.419			
Design-based F(1.00, 268.00) = 0.366			
P-value = 0.546			
Free from NGO			
No	71.28	75.59	73.10
Yes	28.72	24.41	26.90
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.619			
Design-based F(1.00, 268.00) = 0.538			
P-value = 0.464			
Free from Gov.			
No	95.29	92.58	94.14
Yes	4.71	7.42	5.86
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.874			
Design-based F(1.00, 268.00) = 0.844			
P-value = 0.359			

Table S34: Self-Reported Tree Planting Location by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Woodlot			
No	72.54	71.55	72.12
Yes	27.46	28.45	27.88
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.032			
Design-based F(1.00, 268.00) = 0.030			
P-value = 0.863			
Homestead			
No	79.39	72.96	76.68
Yes	20.61	27.04	23.32
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 1.515			
Design-based F(1.00, 268.00) = 1.357			
P-value = 0.245			
Boundaries			
No	74.82	76.73	75.62
Yes	25.18	23.27	24.38
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.129			
Design-based F(1.00, 268.00) = 0.120			
P-value = 0.729			
Field			
No	79.03	82.81	80.62
Yes	20.97	17.19	19.38
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.602			
Design-based F(1.00, 268.00) = 0.615			
P-value = 0.434			
Natural Forest			
No	83.98	84.03	84.00
Yes	16.02	15.97	16.00
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.000			
Design-based F(1.00, 268.00) = 0.000			
P-value = 0.992			
Degraded Forest			
No	97.46	98.34	97.84
Yes	2.54	1.66	2.16
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.240			
Design-based F(1.00, 268.00) = 0.244			
P-value = 0.622			

Treatment Effects

The results of the statistical tests are confirmed by linear probability models reported in Table S35 and S36. In all models, standard errors are clustered at the village level and observations are weighted by the inverse sampling probabilities. On average, respondents from treatment villages are around 9 percentage points less likely to have planted any trees in the past 12 months (Table S35). This treatment difference disappears however, if only the planting of native trees is considered. No treatment differences can be found, when focusing on the probability of having planted native trees among the sub-group of tree planters (Model 1 and 2) and among the whole sample (Model 3 and 4, Table S36).

Table S35: Regressions for self-reported tree planting - DV: self-reported tree planting in the last 12 months (y/n)

	(1)	(2)
Treatment	-0.0886**	-0.0915**
	[-0.160,-0.017]	[-0.166,-0.017]
NO of private forest owners (strat.)	-0.000299	
	[-0.007,0.006]	
Avg. weekly per capita income (strat.)	0.000000909	
	[-0.000,0.000]	
Distance to major road (strat.)	0.00215	
	[-0.031,0.035]	
Average reported land size (strat.)	-0.000921	
	[-0.005,0.003]	
Constant	0.391***	0.400***
	[0.180,0.602]	[0.346,0.453]
Enumerator FE	Yes	No
Subcounty FE	Yes	No
N	752	752
Clusters	119	119
F-Test	317.350	5.924
p-value	0.000	0.016
R2	0.071	0.009
Adj. R2	0.027	0.008

95% confidence intervals in brackets

Standard errors are clustered at the village level. OLS models.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S36: Regressions for self-reported tree planting - DV: Native trees planted in the last 12 months (y/n)

	Tree Planters only		All	
	(1)	(2)	(3)	(4)
Treatment	0.0630	0.0766	0.00130	-0.00557
	[-0.061,0.187]	[-0.060,0.213]	[-0.057,0.060]	[-0.066,0.055]
NO of private forest owners (strat.)	0.00496		0.00330	
	[-0.005,0.015]		[-0.001,0.007]	
Avg. weekly per capita income (strat.)	-0.00000576**		-0.00000197**	
	[-0.000,-0.000]		[-0.000,-0.000]	
Distance to major road (strat.)	-0.00851		0.000555	
	[-0.060,0.043]		[-0.023,0.024]	
Average reported land size (strat.)	0.00246		0.00128	
	[-0.004,0.009]		[-0.001,0.004]	
Constant	0.353**	0.319***	0.132*	0.127***
	[0.024,0.681]	[0.222,0.416]	[-0.014,0.277]	[0.081,0.173]
Enumerator FE	Yes	No	Yes	No
Subcounty FE	Yes	No	Yes	No
N	269	269	752	752
Clusters	101	101	119	119
F-Test	470.843	1.241	2546.715	0.033
p-value	0.000	0.268	0.000	0.856
R2	0.226	0.006	0.108	0.000
Adj. R2	0.114	0.003	0.066	-0.001

95% confidence intervals in brackets

Standard errors are clustered at the village level. OLS models.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Below, we regress the self-reported planting of native and non-native trees on the behavioral drivers (intrinsic motivation, self-efficacy, and perceived forest benefits). Behavioral drivers are only correlated with the planting of native trees (Table S37), but not with the planting of non-native trees (Table S38).

Table S37: Regressions for self-reported tree planting - DV: Native trees planted in the last 12 months (y/n) and behavioral drivers as explanatory variables

	(1)	(2)	(3)	(4)
Intrinsic Motivation (rel.)	0.238***			0.228***
	[0.149,0.328]			[0.132,0.324]
Self-Efficacy (rel.)		0.309***		0.193*
		[0.115,0.503]		[-0.008,0.393]
Forest Benefits Score (rel.)			0.0131	-0.0859
			[-0.365,0.391]	[-0.472,0.300]
NO of private forest owners (strat.)	0.00315	0.00337*	0.00329	0.00329
	[-0.001,0.007]	[-0.001,0.007]	[-0.001,0.007]	[-0.001,0.007]
Avg. weekly per capita income (strat.)	-0.00000193*	-0.00000203**	-0.00000196*	-0.00000198*
	[-0.000,0.000]	[-0.000,-0.000]	[-0.000,0.000]	[-0.000,0.000]
Distance to major road (strat.)	0.000825	-0.000972	0.00201	0.00169
	[-0.021,0.022]	[-0.023,0.021]	[-0.021,0.025]	[-0.021,0.025]
Average reported land size (strat.)	0.000995	0.00131	0.00148	0.00119
	[-0.002,0.004]	[-0.001,0.004]	[-0.001,0.004]	[-0.001,0.004]
Constant	-0.0473	-0.0336	0.113	-0.118
	[-0.219,0.124]	[-0.226,0.159]	[-0.161,0.387]	[-0.414,0.177]
Enumerator FE	Yes	Yes	Yes	Yes
Subcounty FE	Yes	Yes	Yes	Yes
N	749	744	719	710
Clusters	119	119	118	118
F-Test	2403.242	2285.175	2254.818	2046.447
p-value	0.000	0.000	0.000	0.000
R2	0.129	0.121	0.103	0.132
Adj. R2	0.088	0.079	0.059	0.085

95% confidence intervals in brackets

Standard errors are clustered at the village level. OLS models.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S38: Regressions for self-reported tree planting - DV: Non-Native trees planted in the last 12 months (y/n) and behavioral drivers as explanatory variables

	(1)	(2)	(3)	(4)
Intrinsic Motivation (rel.)	-0.0805			-0.133
	[-0.245,0.084]			[-0.301,0.035]
Self-Efficacy (rel.)		0.179		0.222
		[-0.086,0.444]		[-0.055,0.499]
Forest Benefits Score (rel.)			0.327	0.340
			[-0.174,0.828]	[-0.148,0.829]
NO of private forest owners (strat.)	-0.00456	-0.00445	-0.00502*	-0.00459*
	[-0.010,0.001]	[-0.010,0.001]	[-0.011,0.001]	[-0.010,0.001]
Avg. weekly per capita income (strat.)	0.00000272***	0.00000268***	0.00000281***	0.00000280***
	[0.000,0.000]	[0.000,0.000]	[0.000,0.000]	[0.000,0.000]
Distance to major road (strat.)	-0.00488	-0.00389	-0.00494	-0.00490
	[-0.031,0.021]	[-0.029,0.021]	[-0.031,0.021]	[-0.031,0.021]
Average reported land size (strat.)	-0.00230	-0.00237	-0.00220	-0.00205
	[-0.007,0.002]	[-0.007,0.002]	[-0.007,0.003]	[-0.006,0.002]
Constant	0.306***	0.146	0.0537	0.0242
	[0.116,0.496]	[-0.054,0.347]	[-0.229,0.337]	[-0.300,0.348]
Enumerator FE	Yes	Yes	Yes	Yes
Subcounty FE	Yes	Yes	Yes	Yes
N	749	744	719	710
Clusters	119	119	118	118
F-Test	779.614	898.593	819.373	839.178
p-value	0.000	0.000	0.000	0.000
R2	0.063	0.061	0.065	0.067
Adj. R2	0.018	0.016	0.019	0.017

95% confidence intervals in brackets

Standard errors are clustered at the village level. OLS models.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

F Other Environmental Projects

The PES program under this study has not been implemented in a vacuum. CSWCT (the NGO that implemented the PES scheme), other NGOs and government agencies have and continue to run environmental conservation projects in the research area. This poses a potential source of bias for the estimation of long-term treatment effects. Such organizations may specifically target either treatment villages (e.g. due to higher forest cover or higher awareness) or control villages (e.g. because of the lack of prior interventions). As such, any treatment and control comparison might be distorted.

As specified in the Pre-Analysis Plan, we aimed to control for such effects by collecting data from NGOs directly. While we did not succeed in doing this, we use self-reported participation in environmental or conservation programs as additional controls. Participants were asked "Are you or is anyone in your household involved in any environmental or conservation programs?" and "If yes, which organizations run the programs? [MULTI SELECT]".

Table S39 provides a summary of responses differentiated by treatment status. A substantial share reported to be involved in environmental programs (52.89 %). The majority of respondents are in particular involved in projects run by CSWCT (31.91 %). Here, simple statistical tests indicate that the share is significantly higher in treatment compared to control villages. Participation in projects from other NGOs is relatively low and not significantly different between treatment and control.

Table S40 - S43 provide robustness checks for the main analysis. One specification includes a general binary indicator for project participation and another specification includes dichotomous variables differentiated by NGOs. Except for the forest benefits score, all outcomes are positively correlated with participation in environmental programs. Please note that the estimates should not be interpreted as the causal effect of program participation on the outcomes. The correlations are not homogeneous across NGOs and outcomes. Importantly, all our main results with respect to the treatment effects are robust to these additional controls.

Table S39: Participation in Environmental Projects by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Participation Env. Project			
No	52.41	41.51	47.11
Yes	47.59	58.49	52.89
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 8.914			
Design-based F(1.00, 747.00) = 8.245			
P-value = 0.004			
CSWCT			
No	76.94	58.78	68.09
Yes	23.06	41.22	31.91
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 28.562			
Design-based F(1.00, 752.00) = 26.973			
P-value = 0.000			
Jane Goodall Institute			
No	93.48	93.26	93.37
Yes	6.52	6.74	6.63
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.014			
Design-based F(1.00, 752.00) = 0.014			
P-value = 0.906			
Eco Trust			
No	91.97	94.51	93.21
Yes	8.03	5.49	6.79
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 1.905			
Design-based F(1.00, 752.00) = 1.668			
P-value = 0.197			
World Vision			
No	93.90	94.91	94.39
Yes	6.10	5.09	5.61
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.362			
Design-based F(1.00, 752.00) = 0.327			
P-value = 0.568			
Wildlife Conservation Society			
No	97.05	98.44	97.73
Yes	2.95	1.56	2.27
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 1.646			
Design-based F(1.00, 752.00) = 1.622			
P-value = 0.203			
WWF			
No	99.11	98.82	98.97
Yes	0.89	1.18	1.03
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.154			
Design-based F(1.00, 752.00) = 0.178			
P-value = 0.673			

Table S40: Robustness Checks Controlling for Environmental Projects - Hypothesis 1 - DV: Share of Native Seedlings

	(1)	(2)	(3)	(4)
Treatment	0.025	0.032	0.013	0.020
	[-0.120,0.170]	[-0.106,0.170]	[-0.131,0.157]	[-0.117,0.157]
Participation Env. Project	0.198***		0.142**	
	[0.060,0.335]		[0.004,0.279]	
NO of private forest owners (strat.)	0.010	0.008	0.011	0.009
	[-0.005,0.024]	[-0.007,0.022]	[-0.003,0.025]	[-0.005,0.023]
Avg. weekly per capita income (strat.)	-0.000**	-0.000**	-0.000**	-0.000**
	[-0.000,-0.000]	[-0.000,-0.000]	[-0.000,-0.000]	[-0.000,-0.000]
Distance to major road (strat.)	-0.005	0.003	0.009	0.018
	[-0.072,0.063]	[-0.064,0.070]	[-0.054,0.073]	[-0.045,0.081]
Average reported land size (strat.)	0.010**	0.010**	0.011**	0.011***
	[0.001,0.018]	[0.002,0.018]	[0.002,0.020]	[0.003,0.020]
CSWCT		0.143*		0.092
		[-0.009,0.295]		[-0.062,0.246]
Jane Goodall Institute		0.155		0.120
		[-0.187,0.497]		[-0.213,0.454]
Eco Trust		0.454***		0.470***
		[0.172,0.735]		[0.178,0.763]
World Vision		0.441***		0.446***
		[0.145,0.738]		[0.135,0.756]
Wildlife Conservation Society		-0.064		-0.103
		[-0.487,0.359]		[-0.493,0.287]
WWF		-0.120		-0.160
		[-0.814,0.575]		[-0.792,0.473]
Price ratio = 1			0.110	0.100
			[-0.171,0.392]	[-0.180,0.381]
Price ratio > 1			0.456***	0.463***
			[0.228,0.684]	[0.229,0.696]
Price ratio NA			0.075	0.092
			[-0.221,0.371]	[-0.208,0.391]
Avail. ratio = 1			-0.122	-0.110
			[-0.333,0.089]	[-0.332,0.111]
Avail. ratio > 1			-0.183	-0.187
			[-0.412,0.047]	[-0.422,0.048]
Avail. ratio NA			-0.113	-0.122
			[-0.415,0.190]	[-0.426,0.183]
Intention to plant			-0.178	-0.191
			[-0.586,0.231]	[-0.597,0.216]

Constant	0.324	0.377*	0.426	0.469
	[-0.139,0.788]	[-0.048,0.801]	[-0.250,1.102]	[-0.173,1.111]
var(e.choice_seedlings_rel)	0.666***	0.648***	0.620***	0.601***
	[0.549,0.783]	[0.536,0.761]	[0.511,0.730]	[0.496,0.705]
Enumerator FE	Yes	Yes	Yes	Yes
Subcounty FE	Yes	Yes	Yes	Yes
N	747	751	737	741
Clusters	119	119	118	118
F-Statistic	36.521	35.909	34.034	32.181
p	0.000	0.000	0.000	0.000
Pseudo R-Squared	0.035	0.047	0.054	0.067

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S41: Robustness Checks Controlling for Environmental Projects - Hypothesis 2 - DV: Intrinsic Motivation Score (rel.)

	(1)	(2)
Treatment	-0.001	-0.000
	[-0.046,0.044]	[-0.047,0.046]
Participation Env. Project	0.093***	
	[0.056,0.131]	
NO of private forest owners (strat.)	0.001	0.001
	[-0.002,0.005]	[-0.003,0.005]
Avg. weekly per capita income (strat.)	-0.000	-0.000
	[-0.000,0.000]	[-0.000,0.000]
Distance to major road (strat.)	-0.002	0.001
	[-0.021,0.018]	[-0.019,0.021]
Average reported land size (strat.)	0.002*	0.002
	[-0.000,0.004]	[-0.000,0.004]
CSWCT		0.062***
		[0.022,0.103]
Jane Goodall Institute		0.006
		[-0.058,0.070]
Eco Trust		0.116***
		[0.056,0.176]
World Vision		0.061
		[-0.025,0.148]
Wildlife Conservation Society		0.063
		[-0.077,0.204]
WWF		0.079
		[-0.046,0.203]
Constant	0.698***	0.737***
	[0.584,0.813]	[0.631,0.843]
var(e.sum_int_motivation_rel)	0.060***	0.059***
	[0.049,0.070]	[0.049,0.070]
Enumerator FE	Yes	Yes
Subcounty FE	Yes	Yes
N	745	749
Clusters	119	119
F-Statistic	339.231	295.424
p	0.000	0.000
Pseudo R-Squared	0.376	0.383

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S42: Robustness Checks Controlling for Environmental Projects - Hypothesis 3 - DV: Self-Efficacy Score (rel.)

	(1)	(2)
Treatment	-0.008	-0.006
	[-0.027,0.011]	[-0.025,0.013]
Participation Env. Project	0.026**	
	[0.005,0.046]	
NO of private forest owners (strat.)	0.001	0.001
	[-0.001,0.003]	[-0.001,0.003]
Avg. weekly per capita income (strat.)	-0.000	-0.000
	[-0.000,0.000]	[-0.000,0.000]
Distance to major road (strat.)	0.003	0.005
	[-0.005,0.012]	[-0.003,0.013]
Average reported land size (strat.)	-0.000	-0.000
	[-0.002,0.001]	[-0.002,0.001]
CSWCT		0.016
		[-0.004,0.035]
Jane Goodall Institute		-0.020
		[-0.061,0.021]
Eco Trust		0.047**
		[0.011,0.083]
World Vision		0.026
		[-0.012,0.063]
Wildlife Conservation Society		0.057**
		[0.013,0.100]
WWF		0.077***
		[0.036,0.118]
Constant	0.518***	0.520***
	[0.450,0.586]	[0.454,0.585]
var(e.self_eff_score_rel)	0.013***	0.013***
	[0.012,0.015]	[0.012,0.015]
Enumerator FE	Yes	Yes
Subcounty FE	Yes	Yes
N	740	744
Clusters	119	119
F-Statistic	108.231	129.329
p	0.000	0.000
Pseudo R-Squared	-0.672	-0.708

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S43: Robustness Checks Controlling for Environmental Projects - Hypothesis 4 - DV: Forest Benefits Score (rel.)

	(1)	(2)
Treatment	0.001	-0.000
	[-0.008,0.010]	[-0.009,0.009]
Participation Env. Project	0.009*	
	[-0.002,0.019]	
NO of private forest owners (strat.)	0.000	0.000
	[-0.001,0.001]	[-0.001,0.001]
Avg. weekly per capita income (strat.)	0.000	0.000
	[-0.000,0.000]	[-0.000,0.000]
Distance to major road (strat.)	0.000	0.000
	[-0.004,0.004]	[-0.004,0.005]
Average reported land size (strat.)	0.000	0.000
	[-0.000,0.001]	[-0.000,0.001]
CSWCT		0.010*
		[-0.000,0.020]
Jane Goodall Institute		-0.005
		[-0.025,0.015]
Eco Trust		0.016
		[-0.004,0.035]
World Vision		-0.002
		[-0.025,0.022]
Wildlife Conservation Society		-0.019
		[-0.051,0.012]
WWF		-0.012
		[-0.043,0.019]
Constant	0.468***	0.472***
	[0.433,0.503]	[0.438,0.505]
var(e.forest_diff_benefits_rel)	0.005***	0.004***
	[0.004,0.005]	[0.004,0.005]
Enumerator FE	Yes	Yes
Subcounty FE	Yes	Yes
N	715	719
Clusters	118	118
F-Statistic	1073.630	878.226
p	0.000	0.000
Pseudo R-Squared	-0.179	-0.182

95% confidence intervals in brackets

Standard errors are clustered at the village level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

G Comparison between Participants and Non-Participants

As raised in the main article, we cannot estimate the crowding effects for enrolled forest owners. Common approaches such as instrumental variables or matching are not suitable in our study setting. In the following, we present a comparison between enrolled and non-enrolled forest owners, while controlling for enumerator effects. We do not find any systematic differences between PES participants and non-participants (Table S44 and S45). Without baseline data with respect to the outcomes, we cannot control for potential pre-existing differences in pro-environmental behavior and underlying drivers. It is thus important to interpret differences solely as correlations and not as causal treatment effects.

Table S44: Comparing PES Participants with Non-Participants - DV: Share of Native Seedlings

	(1) Treatment Villages	(2) All Villages
Enrolled=1	-0.089	-0.003
	[-0.310,0.132]	[-0.196,0.190]
Constant	0.713***	0.672***
	[0.249,1.177]	[0.341,1.002]
var(e.choice_seedlings_rel)	0.711***	0.706***
	[0.504,0.917]	[0.564,0.847]
Enumerator FE	Yes	Yes
N	362	751
F-Statistic	9.950	1.075
p	0.000	0.367
Pseudo R-Squared	0.029	0.013

95% confidence intervals in brackets

Standard errors are clustered at the individual level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S45: Comparing PES Participants with Non-Participants (Treatment Villages Only)

	(1) Int. Motivation	(2) Self-Efficacy	(3) Forest Benefits
Enrolled=1	-0.007	0.013	0.004
	[-0.063,0.049]	[-0.015,0.041]	[-0.012,0.021]
Constant	0.903***	0.569***	0.460***
	[0.796,1.010]	[0.512,0.626]	[0.433,0.486]
var(e.sum_int_motivation_rel)	0.061***		
	[0.044,0.078]		
var(e.self_eff_score_rel)		0.013***	
		[0.011,0.015]	
var(e.forest_diff_benefits_rel)			0.004***
			[0.004,0.005]
Enumerator FE	Yes	Yes	Yes
N	360	359	350
F-Statistic	4.085	38.745	45.157
p	0.000	0.000	0.000
Pseudo R-Squared	0.318	-0.615	-0.252

95% confidence intervals in brackets

Standard errors are clustered at the individual level. Tobit models bounded between 0 and 1.

Observations are weighted by the inverse sampling probabilities.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

H Attrition and Missing Data

H.1 Attrition

For the following analysis of attrition, we include the 753 respondents from the final sample, 146 households that were originally sampled but could not be interviewed, and 11 additional respondents who were sampled as a replacement but could not be interviewed. Table S46 below compares attrition rates of treatment and control villages. While attrition of sampled households is slightly higher in treatment than control villages with 19 % compared to 15 %, these differences are not statistically significant.

Table S46: Attrition Rate by Treatment Status (with sampling weights)

	Treatment Status					
	Control		*Treatment*		*Total*	
	No.	Col %	No.	Col %	No.	Col %
attrited						
No	390	85	363	81	753	83
Yes	71	15	86	19	157	17
Total	461	100	449	100	910	100

Pearson chi2(1) = 2.243
P-value = 0.134

To assess whether baseline characteristics explain attrition, we present linear probability models in Table S47 (standard errors clustered at the village level). Here, we regress whether a respondent attrited on baseline characteristics. Overall, we observe that household heads with more education and households with rented land at baseline are more likely to attrite. Both types of households are potentially more likely to have migrated until the follow-up survey.

The second models includes interactions with the treatment dummy. A joint F-test for all interactions in the second model (reported at the bottom of the table) indicates that baseline characteristics do not differently affect attrition in treatment and control villages (p = 0.145). Table S48 provides a summary of baseline characteristics of attrited respondents, differentiated by treatment status. A joint F-test indicates however that differences in socio-economic characteristics are statistically significant. Overall, there is mixed evidence whether different attrition dynamics in treatment and control can potentially explain our findings.

We therefore provide Lee bounds for the estimated treatment effects (see Table S49). Lee bounds are based on a trimming approach to account for non-random attrition (Lee 2009). It requires few underlying assumptions (i.e. random treatment assignment and monotonicity). The results show that for the main outcome (seedling choice) and two of the three secondary outcomes, lower and upper Lee bounds still do not result in significant treatment effects. One exception is the self-efficacy score: the lower treatment effect bound results in a statistically significant negative treatment effect.

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Table S47: Attrition Regressions

	(1)	(2)
Household head's age	-0.00153	-0.000618
	[-0.003,0.000]	[-0.003,0.002]
Household head's years of education	-0.00573**	-0.00177
	[-0.011,-0.000]	[-0.009,0.005]
IHS of self-reported land area (ha)	0.0201	0.0438*
	[-0.013,0.053]	[-0.005,0.093]

Self-reported forest area (ha)	0.000996	0.000220
	[-0.002,0.004]	[-0.003,0.003]
Cut any trees in the last 3 years	-0.00681	-0.0153
	[-0.083,0.069]	[-0.125,0.095]
IHS of total revenue from cut trees	-0.00299	-0.0145*
	[-0.015,0.009]	[-0.029,0.000]
Rented any part of land	0.0889**	0.0937*
	[0.016,0.162]	[-0.004,0.191]
Involved in any environmental program	-0.00442	0.0196
	[-0.078,0.069]	[-0.088,0.127]
Treated	0.0372	0.339**
	[-0.012,0.086]	[0.044,0.634]
Household head's age × Treatment Status		-0.00166
		[-0.005,0.002]
Household head's years of education × Treatment Status		-0.00740
		[-0.019,0.004]
IHS of self-reported land area (ha) × Treatment Status		-0.0582*
		[-0.126,0.009]
Self-reported forest area (ha) × Treatment Status		0.00939
		[-0.005,0.024]
Cut any trees in the last 3 years × Treatment Status		0.00607
		[-0.149,0.161]
IHS of total revenue from cut trees × Treatment Status		0.0251**
		[0.002,0.048]
Rented any part of land × Treatment Status		-0.000644
		[-0.148,0.147]
Involved in any environmental program × Treatment Status		-0.0649
		[-0.214,0.084]
Constant	0.175**	0.0358
	[0.030,0.320]	[-0.159,0.231]
F-Test Interactions: p		0.145
N	896	896
F-Test	1.809	1.683
p-value	0.063	0.041
R2	0.021	0.037

95% confidence intervals in brackets

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S48: Baseline Characteristics of Attrited Observations by Treatment status (with sampling weights)

Variable	N	(1) Control Mean/SD	N	(2) Treatment Mean/SD	N	(3) Total Mean/SD	T-test Difference (1)-(2)
Household head's age	71	47.154 (16.055)	85	45.420 (13.990)	156	46.212 (14.969)	1.734
Household head's years of education	70	8.182 (3.579)	85	6.994 (3.989)	155	7.532 (3.873)	1.188*
HH owns, rents, squats on, uses or borrows some land	71	1.000 (0.000)	86	0.989 (0.100)	157	0.994 (0.074)	0.011
Self-reported land area (ha)	71	32.206 (177.325)	86	10.782 (15.167)	157	20.513 (120.197)	21.424
Self-reported forest area (ha)	71	3.791 (13.238)	86	2.240 (4.019)	157	2.944 (9.408)	1.551
Cut any trees in the last 3 years	71	0.811 (0.393)	86	0.863 (0.350)	157	0.839 (0.370)	-0.052
Rented any part of land	71	0.337 (0.505)	86	0.237 (0.433)	157	0.283 (0.471)	0.100
Had dispute with neighbor about land	71	0.171 (0.373)	86	0.209 (0.408)	157	0.192 (0.392)	-0.038
Tree cover in PFO land circle (ha)	58	3.237 (3.575)	74	4.137 (7.682)	132	3.741 (6.203)	-0.900
IHS of total revenue from cut trees	71	1.980 (2.674)	86	2.704 (2.654)	157	2.375 (2.686)	-0.724*
IHS of food expend. in last 30 days	60	3.605 (0.924)	72	3.676 (1.063)	132	3.644 (0.998)	-0.071
IHS of non-food expend. in last 30 days	60	4.741 (1.306)	72	4.388 (1.601)	132	4.549 (1.487)	0.353
SES Index Baseline	71	0.011 (1.301)	86	0.052 (1.104)	157	0.034 (1.194)	-0.041
F-test of joint significance (F-stat)							2.502***
F-test, number of observations							110

Notes: The value displayed for t-tests are the differences in the means across the groups. The value displayed for F-tests are the F-statistics. Observations are weighted using variable inv_prob_allland as pweight weights.***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table S49: Lee Bounds: Robustness to Attrition

	(1)	(2)	(3)	(4)
	Seedling Choice	Int. Motivation	Self-Efficacy	Forest Benefits
lower	0.00988	-0.0238	-0.0287**	-0.00636
	[-0.058,0.078]	[-0.070,0.022]	[-0.055,-0.002]	[-0.021,0.008]
upper	0.0469	0.0141	-0.00499	0.000525
	[-0.016,0.110]	[-0.021,0.049]	[-0.033,0.023]	[-0.017,0.018]
N	910	910	910	910
N selected	756	755	750	726
Trimming proportion	0.036	0.044	0.040	0.024
CI lower	-0.048	-0.063	-0.051	-0.019
CI upper	0.101	0.044	0.019	0.016

95% confidence intervals in brackets

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

H.2 Missing Outcomes

Table S50 provides an overview of the frequency of missing outcomes among the interviewed respondents. Overall, only very few interviewed respondents did not provide answers to the main and secondary outcomes. The highest rate can be found for the forest benefits score, where 4.42 % of the observations have a missing outcome. More importantly, treatment and control differences for all outcomes are not statistically significant. We therefore refrain from providing separate estimation bounds for missing data.

Table S50: Missing Outcomes by Treatment Status (with sampling weights)

	Treatment Status		
	Control	*Treatment*	*Total*
	%	%	%
Missing Seedling Choice			
No	99.52	99.77	99.64
Yes	0.48	0.23	0.36
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.321			
Design-based F(1.00, 752.00) = 0.273			
P-value = 0.602			
Missing Intrinsic Motivation Score			
No	99.78	99.13	99.46
Yes	0.22	0.87	0.54
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 1.461			
Design-based F(1.00, 752.00) = 1.586			
P-value = 0.208			
Missing Self-Efficacy Score			
No	98.91	98.75	98.83
Yes	1.09	1.25	1.17
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.040			
Design-based F(1.00, 752.00) = 0.039			
P-value = 0.843			
Missing Forest Benefits Score			
No	94.91	96.29	95.58
Yes	5.09	3.71	4.42
Total	100.00	100.00	100.00
Pearson: Uncorrected chi2(1) = 0.852			
Design-based F(1.00, 752.00) = 0.806			
P-value = 0.370			

I Related Literature

Crowding-effects can be either studied when PES incentives are in place, or once they have been removed. In the former case, one can only observe the degree of behavioral crowding in one specific case: when PES backfire and lead in sum to more environmentally damaging behavior compared to a counterfactual. Early lab-in-the-field experiments are examples that do not find such extreme crowding effects, but cannot rule out that motivational crowding reduces the effectiveness of financial incentives (Vollan 2008; Narloch, Pascual, and Drucker 2012; Midler et al. 2015; Handberg and Angelsen 2019; Travers et al. 2011). Focusing alternatively on underlying behavioral drivers, such as motivations, in contrast, does allow to assess the degree of crowding under existing incentives. Such study designs have been implemented in lab-in-the-field experiments (Moros, Vélez, and Corbera 2019) or with real-world PES schemes (Agrawal, Chhatre, and Gerber 2015; Chervier, Le Velly, and Ezzine-de-Blas 2019; Grillos et al. 2019). While some find evidence for crowding-out (Agrawal, Chhatre, and Gerber 2015; Chervier, Le Velly, and Ezzine-de-Blas 2019) or crowding-in (Grillos et al. 2019), other studies observe both dynamics conditional on specific policy designs (Moros, Vélez, and Corbera 2019). Yet, these studies typically cannot answer to what extent the observed differences in motivations or attitudes ultimately translate into behavior.

Other studies focus on the observed behavior or underlying drivers once incentives have been terminated. More recent lab (Kits, Adamowicz, and Boxall 2014) and lab-in-the-field experiments do this (Salk, Lopez, and Wong 2017; Andersson et al. 2018; Kaczan, Swallow, and Adamowicz 2019; Kerr et al. 2019; Maca-Millán, Arias-Arévalo, and Restrepo-Plaza 2021; Lliso et al. 2021; Moros et al. 2023). Only some of these studies find evidence for crowding-out (Kits, Adamowicz, and Boxall 2014) or crowding-in (Andersson et al. 2018; Kaczan, Swallow, and Adamowicz 2019; Lliso et al. 2021; Moros et al. 2023). A number of quasi-experimental studies (Pagiola, Honey-Rosés, and Freire-González 2016; Calle 2020; Pfaff and Costedoat 2021) and experimental studies (World Bank 2018; Rasch et al. 2021) have focused on the impact of real-world PES programs at the behavioral level once the program ended. Most of these studies indicate that positive impacts of PES can still be measured after the programs ended, implying that no or limited crowding-out occurred (Pagiola, Honey-Rosés, and Freire-González 2016; World Bank 2018; Rasch et al. 2021; Calle 2020). Other studies find limited evidence for crowding-out (2021), or even crowding-in (Etchart et al. 2020; Hayes et al. 2022).

The approaches outlined above to study crowding effects of PES have a number of limitations that we aim to address with our design. Lab-in-the-field experiments typically comprise experimental designs that measure cooperation at the group level (e.g. in public good games) or individual altruistic behavior (e.g. in dictator games). Even though experiments can be framed in a specific environmental context (e.g. the planting of trees, or conserving forests), the actual decision in the experiment only affects other group members (i.e. fellow study participants) and one's own payoff (one exception is for example (Lliso et al. 2021)), but not environmental quality. As such it is questionable whether behavior in these experiments is driven by the same underlying motives than real world conservation behavior targeted by PES. In addition, post-incentive effects in such experiments are measured just within minutes from the policy phase, thus not allowing to measure truly long-run effects. Lastly, PES are typically accompanied by a number of complementary interventions (such as trainings, awareness raising campaigns, etc.) that are difficult or even impossible to capture by these experiments.

Focusing on real-world PES schemes can remedy some of these shortcomings. Some studies that did so focused on highly aggregated outcomes (e.g. with remote sensing, Pfaff and Costedoat 2021; World Bank 2018) or behaviors that have been targeted by the initial PES (e.g. Pagiola, Honey-Rosés, and Freire-González 2016). While this is certainly important for assessing the overall effectiveness of a PES program, it provides little insights how the underlying drivers of behavior are affected. Other studies therefore rely on survey items to measure underlying drivers such as motivations, values or beliefs (Grillos et al. 2019; Chervier, Le Velly, and Ezzine-de-Blas 2019). Here, respondents may provide wrong answers that they believe researchers expect. Such demand effects are specifically problematic if respondents in the PES treatment or control group strategically answer in order to sustain PES or increase chances to receive PES in the future, respectively. Lastly, most real-world PES schemes are not randomly assigned to individuals or communities. Many studies consequently rely on quasi-experimental methods to draw causal inference (e.g. Chervier, Le Velly, and Ezzine-de-Blas 2019; Pfaff and Costedoat 2021).

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