Supplementary Information for:

Climate change literacy linked to adaptation among Africa's most vulnerable

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Table S1. Effect of climate literacy on adaptive behavior (random effects)
Results are OLS regressions, regressing the adaptation index on climate change literacy, climate perceptions, vulnerability, and socio-demographic control variables. The first model includes the full adaptation index, while the second includes moving in response to climate change. The third model includes non-agricultural adaptive measures (changing outdoor work and water sources) while the final model includes the most agriculturally relevant adaptive measures (changing grazing patterns/livestock and types of crops planted). The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	Full Index	Migration	Non-Ag.	Ag.
Climate Literate	0.154***	0.011*	0.067***	0.077***
	(0.025)	(0.005)	(0.014)	(0.011)
Droughts Worse	0.232***	0.008	0.122***	0.101***
	(0.054)	(0.011)	(0.030)	(0.024)
Floods Worse	0.059	0.054***	0.007	-0.003
	(0.046)	(0.009)	(0.028)	(0.022)
Crop Failure	0.176***	-0.011	0.092***	0.095***
	(0.040)	(0.007)	(0.023)	(0.022)
Age: 26-35	-0.065*	-0.014*	-0.020	-0.031*
	(0.026)	(0.006)	(0.011)	(0.015)
Age: 36-45	-0.106***	-0.033***	-0.033**	-0.040*
	(0.027)	(0.007)	(0.011)	(0.016)
Age: 46-55	-0.120***	-0.045***	-0.039*	-0.036*
	(0.032)	(0.009)	(0.016)	(0.016)
Age: 55+	-0.166***	-0.060***	-0.039*	-0.069***
	(0.035)	(0.008)	(0.016)	(0.018)
Woman	-0.058***	-0.008	-0.010	-0.040***
	(0.015)	(0.004)	(0.009)	(0.008)
Traditional News Access	0.365***	0.044***	0.175***	0.146***
	(0.050)	(0.012)	(0.028)	(0.024)
New Media Access	0.144***	0.042***	0.081***	0.019
	(0.032)	(0.009)	(0.019)	(0.018)
Educ: Primary	-0.046	-0.011	-0.018	-0.018
	(0.033)	(0.007)	(0.019)	(0.018)
Educ: Secondary	-0.086*	-0.024**	-0.028	-0.033
	(0.039)	(0.008)	(0.024)	(0.019)
Educ: Post-Secondary	-0.150**	-0.037***	-0.053	-0.057*
	(0.047)	(0.009)	(0.028)	(0.026)
Low Lived Poverty	0.284***	0.036***	0.139***	0.105**
	(0.065)	(0.009)	(0.027)	(0.033)
Moderate Lived Poverty	0.482***	0.073***	0.234***	0.172***
	(0.070)	(0.011)	(0.030)	(0.036)
High Lived Poverty	0.684***	0.104***	0.348***	0.229***
	(0.069)	(0.014)	(0.030)	(0.036)
Asset Index	0.024***	0.003*	0.008*	0.014***

	(0.006)	(0.001)	(0.003)	(0.003)
Household Connectivity	-0.064**	-0.013***	-0.015	-0.036***
	(0.020)	(0.004)	(0.010)	(0.010)
Agriculture Employment	0.066*	-0.008	0.003	0.071***
	(0.029)	(0.006)	(0.013)	(0.020)
Rural	0.192***	-0.021*	0.053**	0.161***
	(0.038)	(0.010)	(0.020)	(0.019)
Neighborhood Services	-0.020**	-0.003*	-0.010*	-0.008*
	(0.007)	(0.001)	(0.004)	(0.003)
Constant	0.454***	0.133***	0.224***	0.100*
	(0.117)	(0.019)	(0.063)	(0.051)
Observations	38624	38721	38714	38685

Table S2. Effect of climate literacy on adaptive behavior (fixed effects)
Results are OLS regressions, regressing the adaptation index on climate change literacy, climate perceptions, vulnerability, and socio-demographic control variables. The first model includes the full adaptation index, while the second only includes moving in response to climate change. The third model includes non-agricultural adaptive measures (changing outdoor work and water sources) while the final model includes the most agriculturally relevant adaptive measures (changing grazing patterns/livestock and types of crops planted). The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Fixed effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	Full Index	Migration	Non-Ag.	Ag.
Climate Literate	0.154***	0.011	0.067***	0.077***
	(0.025)	(0.005)	(0.014)	(0.011)
Droughts Worse	0.227***	0.008	0.118***	0.100***
	(0.055)	(0.011)	(0.030)	(0.024)
Floods Worse	0.062	0.054***	0.011	-0.002
	(0.046)	(0.009)	(0.028)	(0.022)
Crop Failure	0.175***	-0.010	0.092***	0.094***
	(0.041)	(0.007)	(0.023)	(0.022)
Age: 26-35	-0.064*	-0.014*	-0.020	-0.030*
	(0.026)	(0.006)	(0.011)	(0.015)
Age: 36-45	-0.105***	-0.032***	-0.033**	-0.040*
	(0.027)	(0.007)	(0.011)	(0.016)
Age: 46-55	-0.119***	-0.044***	-0.039*	-0.035*
	(0.032)	(0.009)	(0.016)	(0.016)
Age: 55+	-0.165***	-0.059***	-0.040*	-0.068***
	(0.035)	(0.008)	(0.016)	(0.018)
Woman	-0.058***	-0.007	-0.010	-0.040***
	(0.015)	(0.004)	(0.009)	(0.008)
Traditional News Access	0.366***	0.044***	0.176***	0.146***
	(0.050)	(0.012)	(0.028)	(0.025)
New Media Access	0.144***	0.041***	0.080***	0.020
	(0.032)	(0.009)	(0.019)	(0.018)
Educ: Primary	-0.047	-0.010	-0.018	-0.018
	(0.034)	(0.007)	(0.019)	(0.018)
Educ: Secondary	-0.084*	-0.024**	-0.027	-0.033
	(0.040)	(0.008)	(0.024)	(0.018)
Educ: Post-Secondary	-0.147**	-0.037***	-0.051	-0.056*
	(0.048)	(0.009)	(0.029)	(0.025)
Low Lived Poverty	0.285***	0.036***	0.141***	0.105**
	(0.066)	(0.009)	(0.027)	(0.034)
Moderate Lived Poverty	0.484***	0.072***	0.238***	0.172***
	(0.071)	(0.011)	(0.030)	(0.036)
High Lived Poverty	0.687***	0.103***	0.352***	0.230***
	(0.070)	(0.014)	(0.030)	(0.037)
Asset Index	0.024***	0.003*	0.008*	0.014***

	(0.006)	(0.001)	(0.003)	(0.003)
Household Connectivity	-0.064**	-0.013**	-0.016	-0.036***
	(0.019)	(0.004)	(0.010)	(0.010)
Agriculture Employment	0.066*	-0.008	0.003	0.071***
	(0.029)	(0.006)	(0.013)	(0.020)
Rural	0.192***	-0.021	0.053*	0.160***
	(0.037)	(0.010)	(0.020)	(0.019)
Neighborhood Services	-0.020**	-0.003	-0.009*	-0.008*
	(0.007)	(0.001)	(0.004)	(0.003)
Constant	0.436***	0.126***	0.205**	0.107
	(0.118)	(0.020)	(0.059)	(0.056)
Observations	38624	38721	38714	38685

Table S3: Effect of climate trends on adaptive behavior

Results are OLS regressions, regressing the adaptation index on climate change literacy, climate perceptions, vulnerability, socio-demographic control variables, and climate trends. Drought is operationalized using SPEI. The omitted base category for trends are no trend, age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. There are fewer than 100 instances where temperature significantly decreased in the previous 30 years or where drought significantly increased. These respondents have been recoded as living in locations with decreases in temperature or increases in drought. Results are robust to excluding these few respondents. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	Temperature	Precipitation	Drought
10 Year	-0.013	-0.086	0.175
Sig. Decrease	(0.094)	(0.087)	(0.121)
Decrease	-0.047	-0.043	0.156*
	(0.086)	(0.058)	(0.068)
Increase	-0.074	0.044	0.023
	(0.073)	(0.057)	(0.057)
Sig. Increase	-0.118	-0.001	0.071
	(0.086)	(0.136)	(0.088)
30 Year	--	0.094	0.207**
Sig. Decrease		(0.081)	(0.070)
Decrease	-0.161*	-0.061	0.194**
	(0.067)	(0.048)	(0.061)
Increase	0.106	-0.017	0.220**
	(0.078)	(0.036)	(0.078)
Sig. Increase	0.110	-0.022	--
	(0.085)	(0.075)	
Climate Literate	0.158***	0.157***	0.158***
	(0.025)	(0.025)	(0.026)
Droughts Worse	0.219***	0.224***	0.226***
	(0.055)	(0.053)	(0.054)
Floods Worse	0.074	0.067	0.069
	(0.042)	(0.041)	(0.041)
Crop Failure	0.175***	0.178***	0.177***
	(0.042)	(0.040)	(0.040)
Age: 26-35	-0.065*	-0.065*	-0.066*
	(0.026)	(0.027)	(0.026)
Age: 36-45	-0.106***	-0.107***	-0.108***
	(0.027)	(0.027)	(0.027)
Age: 46-55	-0.123***	-0.124***	-0.124***
	(0.032)	(0.033)	(0.032)
Age: 55+	-0.168***	-0.167***	-0.169***
	(0.035)	(0.036)	(0.035)
Woman	-0.061***	-0.060***	-0.061***
	(0.015)	(0.015)	(0.015)
Traditional News Access	0.374***	0.371***	0.371***

	(0.049)	(0.049)	(0.049)
New Media Access	0.145***	0.146***	0.147***
	(0.033)	(0.032)	(0.033)
Educ: Primary	-0.051	-0.049	-0.051
	(0.033)	(0.033)	(0.032)
Educ: Secondary	-0.088*	-0.087*	-0.093*
	(0.039)	(0.039)	(0.039)
Educ: Post-Secondary	-0.149**	-0.147**	-0.156***
	(0.048)	(0.047)	(0.047)
Low Lived Poverty	0.282***	0.280***	0.279***
	(0.068)	(0.068)	(0.066)
Moderate Lived Poverty	0.481***	0.479***	0.476***
	(0.073)	(0.072)	(0.070)
High Lived Poverty	0.686***	0.680***	0.679***
	(0.071)	(0.070)	(0.068)
Asset Index	0.024***	0.024***	0.024***
	(0.006)	(0.006)	(0.006)
Household Connectivity	-0.065**	-0.067**	-0.063**
	(0.020)	(0.021)	(0.021)
Agriculture Employment	0.064*	0.063*	0.064*
	(0.029)	(0.029)	(0.030)
Rural	0.187***	0.189***	0.186***
	(0.040)	(0.040)	(0.041)
Neighborhood Services	-0.021**	-0.019**	-0.020**
	(0.007)	(0.007)	(0.007)
Constant	0.428**	0.485***	0.202
	(0.147)	(0.142)	(0.163)
Observations	37929	37929	37929

Table S4. Effect of country-level disaster: Frequency

Results are OLS regressions, regressing the adaptation index on the mean number of each type of disaster at the country level in the previous 5, 10, 20, and 30 years. Fires are excluded from the 5- and 10-year analyses given fewer than four fires occurred. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	5 Year	10 Year	20 Year	30 Year
Mean Drought Frequency	0.417	0.559	0.984	1.510**
	(0.377)	(0.430)	(0.514)	(0.477)
Mean Flood Frequency	-0.095	-0.070	-0.076	-0.157
	(0.064)	(0.080)	(0.108)	(0.102)
Mean Storm Frequency	-0.053	-0.108	-0.178*	-0.288**
	(0.049)	(0.089)	(0.087)	(0.100)
Mean Fire Frequency	--	--	-0.331	0.481
			(1.086)	(0.648)
Climate Literate	0.159***	0.155***	0.155***	0.155***
	(0.026)	(0.025)	(0.025)	(0.025)
Droughts Worse	0.228***	0.230***	0.230***	0.230***
	(0.055)	(0.055)	(0.055)	(0.055)
Floods Worse	0.059	0.060	0.060	0.060
	(0.046)	(0.046)	(0.046)	(0.046)
Crop Failure	0.175***	0.175***	0.175***	0.175***
	(0.041)	(0.041)	(0.041)	(0.040)
Age: 26-35	-0.066*	-0.065*	-0.065*	-0.065*
	(0.026)	(0.026)	(0.026)	(0.026)
Age: 36-45	-0.105***	-0.106***	-0.105***	-0.105***
	(0.027)	(0.027)	(0.027)	(0.027)
Age: 46-55	-0.123***	-0.120***	-0.120***	-0.119***
	(0.032)	(0.032)	(0.032)	(0.032)
Age: 55+	-0.169***	-0.166***	-0.166***	-0.166***
	(0.035)	(0.035)	(0.035)	(0.035)
Woman	-0.061***	-0.058***	-0.058***	-0.058***
	(0.015)	(0.015)	(0.015)	(0.015)
Traditional News Access	0.372***	0.366***	0.365***	0.365***
	(0.051)	(0.050)	(0.050)	(0.050)
New Media Access	0.147***	0.144***	0.144***	0.144***
	(0.033)	(0.032)	(0.032)	(0.032)
Educ: Primary	-0.048	-0.047	-0.047	-0.047
	(0.033)	(0.033)	(0.033)	(0.033)
Educ: Secondary	-0.089*	-0.086*	-0.085*	-0.085*
	(0.039)	(0.039)	(0.039)	(0.039)
Educ: Post-Secondary	-0.151**	-0.149**	-0.149**	-0.149**
	(0.048)	(0.047)	(0.047)	(0.047)
Low Lived Poverty	0.292***	0.284***	0.284***	0.284***
	(0.067)	(0.065)	(0.065)	(0.065)

Moderate Lived Poverty	0.490***	0.482***	0.482***	0.482***
	(0.071)	(0.070)	(0.070)	(0.070)
High Lived Poverty	0.694***	0.685***	0.685***	0.685***
	(0.070)	(0.069)	(0.069)	(0.069)
Asset Index	0.024***	0.024***	0.024***	0.024***
	(0.006)	(0.006)	(0.006)	(0.006)
Household Connectivity	-0.063**	-0.064**	-0.063**	-0.063**
	(0.020)	(0.019)	(0.019)	(0.019)
Agriculture Employment	0.064*	0.067*	0.067*	0.067*
	(0.029)	(0.029)	(0.029)	(0.029)
Rural	0.193***	0.192***	0.192***	0.192***
	(0.038)	(0.038)	(0.038)	(0.038)
Neighborhood Services	-0.020**	-0.020**	-0.020**	-0.020**
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	0.490***	0.457**	0.437**	0.419**
	(0.137)	(0.140)	(0.145)	(0.140)
Observations	38042	38624	38624	38624

Table S5. Effect of climate trends on adaptive behavior, alternate drought measures
Results are OLS regressions, regressing the adaptation index on climate change literacy, climate perceptions, vulnerability, socio-demographic control variables, and drought trends over the previous 10- and 30-years. Drought is operationalized using SPI and frequency of consecutive dry days (CDD) exceeding 5-days per year. The omitted base category for trends are no trend, age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. There are fewer than 100 instances where drought, operationalized as SPI, significantly decreased over the previous 10 years. These respondents have been recoded as living in locations with decreases in drought. Results are robust to excluding these few respondents. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	SPI	CDD Frequency
10-Year	--	-0.172
Sig. Decrease		(0.116)
Decrease	0.285	-0.092
	(0.172)	(0.085)
Increase	0.165	-0.129
	(0.117)	(0.080)
Sig. increase	0.119	-0.115
	(0.154)	(0.109)
30-Year	0.302	0.155
Sig. Decrease	(0.174)	(0.089)
Decrease	0.093	0.113*
	(0.094)	(0.045)
Increase	0.103	0.143**
	(0.108)	(0.045)
Sig. increase	0.103	0.201***
	(0.099)	(0.060)
Climate Literate	0.159***	0.157***
	(0.025)	(0.025)
Droughts Worse	0.224***	0.234***
	(0.054)	(0.054)
Floods Worse	0.070	0.064
	(0.041)	(0.042)
Crop Failure	0.179***	0.177***
	(0.041)	(0.040)
Age: 26-35	-0.066*	-0.068**
	(0.026)	(0.026)
Age: 36-45	-0.107***	-0.109***
	(0.027)	(0.027)
Age: 46-55	-0.123***	-0.126***
	(0.032)	(0.032)
Age: 55+	-0.167***	-0.170***
	(0.035)	(0.036)
Woman	-0.061***	-0.061***

	(0.015)	(0.015)
Traditional News Access	0.375***	0.372***
	(0.049)	(0.049)
New Media Access	0.148***	0.147***
	(0.033)	(0.033)
Educ: Primary	-0.048	-0.049
	(0.032)	(0.032)
Educ: Secondary	-0.088*	-0.092*
	(0.037)	(0.039)
Educ: Post-Secondary	-0.152**	-0.152**
	(0.047)	(0.047)
Low Lived Poverty	0.283***	0.282***
	(0.068)	(0.067)
Moderate Lived Poverty	0.480***	0.479***
	(0.072)	(0.071)
High Lived Poverty	0.685***	0.679***
	(0.070)	(0.070)
Asset Index	0.024***	0.024***
	(0.006)	(0.006)
Household Connectivity	-0.061**	-0.062**
	(0.021)	(0.021)
Agriculture Employment	0.063*	0.062*
	(0.029)	(0.029)
Rural	0.189***	0.187***
	(0.039)	(0.040)
Neighborhood Services	-0.020**	-0.021**
	(0.007)	(0.007)
Constant	0.192	0.449***
	(0.140)	(0.119)
Observations	37929	37929

Table S6. Effect of region level disaster frequency

Results are OLS regressions, regressing the adaptation index on the mean number of each type of disaster at the regional level in the previous 5, 10, and 30 years. Fires are excluded from the 5- and 10-year analyses given fewer than four fires occurred. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	5 Year	10 Year	30 Year
Mean Drought Frequency	-0.212	0.755**	0.839
	(0.454)	(0.290)	(0.532)
Mean Storm Frequency	0.118	-0.312	-0.395
	(0.160)	(0.296)	(0.397)
Mean Flood Frequency	0.077	0.124	0.244
	(0.136)	(0.149)	(0.223)
Mean Fire Frequency	--	--	-2.831
			(4.248)
Climate Literate	0.143***	0.173***	0.171***
	(0.036)	(0.030)	(0.028)
Droughts Worse	0.197**	0.249***	0.195***
	(0.076)	(0.062)	(0.059)
Floods Worse	0.000	-0.009	0.053
	(0.039)	(0.045)	(0.048)
Crop Failure	0.200***	0.223***	0.170***
	(0.042)	(0.048)	(0.048)
Age: 26-35	-0.075*	-0.065*	-0.057
	(0.035)	(0.030)	(0.030)
Age: 36-45	-0.104**	-0.113***	-0.111***
	(0.038)	(0.031)	(0.033)
Age: 46-55	-0.100*	-0.128***	-0.132***
	(0.040)	(0.038)	(0.037)
Age: 55+	-0.137**	-0.157***	-0.165***
	(0.049)	(0.044)	(0.042)
Woman	-0.047**	-0.055***	-0.055***
	(0.017)	(0.016)	(0.015)
Traditional News Access	0.378***	0.378***	0.368***
	(0.061)	(0.050)	(0.057)
New Media Access	0.144**	0.156**	0.132**
	(0.056)	(0.048)	(0.041)
Educ: Primary	-0.004	-0.035	-0.051
	(0.046)	(0.040)	(0.043)
Educ: Secondary	0.013	-0.053	-0.084
	(0.053)	(0.046)	(0.049)
Educ: Post-Secondary	-0.033	-0.085	-0.145*
	(0.062)	(0.059)	(0.057)
Low Lived Poverty	0.238***	0.295***	0.303***
	(0.060)	(0.066)	(0.083)

Moderate Lived Poverty	0.463***	0.517***	0.515***
	(0.068)	(0.067)	(0.090)
High Lived Poverty	0.624***	0.709***	0.729***
	(0.060)	(0.062)	(0.085)
Asset Index	0.024***	0.021**	0.024***
	(0.007)	(0.006)	(0.007)
Household Connectivity	-0.061**	-0.067***	-0.059**
	(0.021)	(0.018)	(0.022)
Agriculture Employment	0.063*	0.082*	0.094**
	(0.029)	(0.034)	(0.031)
Rural	0.252***	0.211***	0.203***
	(0.045)	(0.042)	(0.045)
Neighborhood Services	-0.011	-0.016*	-0.017
	(0.009)	(0.008)	(0.009)
Constant	0.338*	0.328**	0.348*
	(0.133)	(0.125)	(0.146)
Observations	16901	22954	29983

Table S7. Effect of country-level disaster: Number affected

Results are OLS regressions, regressing the adaptation index on the mean logged number of people affected by each type of disaster at the country level in the previous 5, 10, 20, and 30 years. Fires are excluded from the 5- and 10-year analyses given fewer than four fires occurred. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	5 Year	10 Year	20 Year	30 Year
Log Drought Affected	0.007	0.001	0.004	0.015
	(0.008)	(0.009)	(0.010)	(0.011)
Log Flood Affected	-0.023	-0.014	-0.008	-0.024
	(0.013)	(0.013)	(0.028)	(0.033)
Log Storm Affected	-0.017	-0.008	-0.003	-0.012
	(0.012)	(0.011)	(0.013)	(0.012)
Log Fire Affected	--	--	-0.021	0.004
			(0.021)	(0.027)
Climate Literate	0.159***	0.155***	0.154***	0.155***
	(0.026)	(0.025)	(0.025)	(0.025)
Droughts Worse	0.227***	0.232***	0.232***	0.231***
	(0.055)	(0.054)	(0.054)	(0.054)
Floods Worse	0.060	0.058	0.058	0.059
	(0.046)	(0.046)	(0.046)	(0.046)
Crop Failure	0.175***	0.176***	0.176***	0.176***
	(0.041)	(0.041)	(0.041)	(0.040)
Age: 26-35	-0.065*	-0.065*	-0.065*	-0.065*
	(0.026)	(0.026)	(0.026)	(0.026)
Age: 36-45	-0.105***	-0.106***	-0.106***	-0.106***
	(0.027)	(0.027)	(0.027)	(0.027)
Age: 46-55	-0.123***	-0.121***	-0.120***	-0.120***
	(0.032)	(0.032)	(0.032)	(0.032)
Age: 55+	-0.169***	-0.167***	-0.166***	-0.167***
	(0.035)	(0.035)	(0.035)	(0.035)
Woman	-0.061***	-0.058***	-0.058***	-0.058***
	(0.015)	(0.015)	(0.015)	(0.015)
Traditional News Access	0.372***	0.365***	0.364***	0.365***
	(0.051)	(0.050)	(0.050)	(0.050)
New Media Access	0.146***	0.144***	0.144***	0.144***
	(0.033)	(0.032)	(0.032)	(0.032)
Educ: Primary	-0.048	-0.046	-0.046	-0.047
	(0.034)	(0.033)	(0.033)	(0.033)
Educ: Secondary	-0.089*	-0.086*	-0.086*	-0.086*
	(0.039)	(0.039)	(0.039)	(0.039)
Educ: Post-Secondary	-0.151**	-0.150**	-0.150**	-0.150**
	(0.048)	(0.047)	(0.047)	(0.047)
Low Lived Poverty	0.293***	0.285***	0.284***	0.284***

	(0.068)	(0.065)	(0.065)	(0.065)
Moderate Lived Poverty	0.492***	0.483***	0.482***	0.482***
	(0.072)	(0.070)	(0.070)	(0.070)
High Lived Poverty	0.696***	0.685***	0.684***	0.685***
	(0.071)	(0.069)	(0.069)	(0.069)
Asset Index	0.024***	0.024***	0.024***	0.024***
	(0.006)	(0.006)	(0.006)	(0.006)
Household Connectivity	-0.063**	-0.064***	-0.064***	-0.064**
	(0.020)	(0.019)	(0.019)	(0.019)
Agriculture Employment	0.064*	0.067*	0.066*	0.067*
	(0.029)	(0.029)	(0.029)	(0.029)
Rural	0.192***	0.191***	0.192***	0.192***
	(0.038)	(0.038)	(0.038)	(0.038)
Neighborhood Services	-0.020**	-0.020**	-0.020**	-0.020**
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	0.662***	0.595***	0.533	0.620
	(0.169)	(0.167)	(0.302)	(0.326)
Observations	38042	38624	38624	38624

Table S8. Effect of country-level disaster: Mortality rate

Results are OLS regressions, regressing the adaptation index on the mean logged number of deaths from each type of disaster at the country level in the previous 5, 10, 20, and 30 years. Fires and droughts are excluded from all analyses given there is insufficient variation in mortality due to these disasters to estimate an effect. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	5 Year	10 Year	20 Year	30 Year
Log Flood Mortality	-0.026	-0.026	-0.023	0.001
	(0.034)	(0.035)	(0.043)	(0.040)
Log Storm Mortality	0.028	0.016	0.013	-0.019
	(0.023)	(0.023)	(0.028)	(0.030)
Climate Literate	0.158***	0.154***	0.154***	0.154***
	(0.025)	(0.025)	(0.025)	(0.025)
Droughts Worse	0.227***	0.231***	0.231***	0.231***
	(0.055)	(0.055)	(0.055)	(0.055)
Floods Worse	0.060	0.060	0.059	0.059
	(0.046)	(0.046)	(0.046)	(0.046)
Crop Failure	0.175***	0.175***	0.176***	0.176***
	(0.041)	(0.041)	(0.041)	(0.041)
Age: 26-35	-0.065*	-0.065*	-0.065*	-0.065*
	(0.026)	(0.026)	(0.026)	(0.026)
Age: 36-45	-0.105***	-0.106***	-0.106***	-0.106***
	(0.027)	(0.027)	(0.027)	(0.027)
Age: 46-55	-0.122***	-0.120***	-0.120***	-0.120***
	(0.032)	(0.032)	(0.032)	(0.032)
Age: 55+	-0.169***	-0.167***	-0.167***	-0.166***
	(0.035)	(0.035)	(0.035)	(0.035)
Woman	-0.061***	-0.058***	-0.058***	-0.058***
	(0.015)	(0.015)	(0.015)	(0.015)
Traditional News Access	0.372***	0.365***	0.365***	0.365***
	(0.051)	(0.050)	(0.050)	(0.050)
New Media Access	0.147***	0.144***	0.144***	0.144***
	(0.033)	(0.032)	(0.032)	(0.032)
Educ: Primary	-0.048	-0.047	-0.047	-0.046
	(0.033)	(0.033)	(0.033)	(0.033)
Educ: Secondary	-0.088*	-0.086*	-0.086*	-0.086*
	(0.039)	(0.039)	(0.039)	(0.039)
Educ: Post-Secondary	-0.151**	-0.149**	-0.149**	-0.149**
	(0.048)	(0.047)	(0.047)	(0.047)
Low Lived Poverty	0.293***	0.284***	0.284***	0.284***
	(0.067)	(0.065)	(0.065)	(0.065)
Moderate Lived Poverty	0.491***	0.482***	0.482***	0.482***
	(0.072)	(0.070)	(0.070)	(0.070)
High Lived Poverty	0.696***	0.685***	0.685***	0.685***

	(0.071)	(0.069)	(0.069)	(0.069)
Asset Index	0.024***	0.024***	0.024***	0.024***
	(0.006)	(0.006)	(0.006)	(0.006)
Household Connectivity	-0.063**	-0.064**	-0.064**	-0.064**
	(0.020)	(0.020)	(0.020)	(0.020)
Agriculture Employment	0.063*	0.066*	0.066*	0.066*
	(0.029)	(0.029)	(0.029)	(0.029)
Rural	0.193***	0.192***	0.192***	0.192***
	(0.038)	(0.038)	(0.038)	(0.038)
Neighborhood Services	-0.020**	-0.020**	-0.020**	-0.020**
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	0.483***	0.489***	0.486***	0.457***
	(0.141)	(0.136)	(0.143)	(0.137)
Observations	38042	38624	38624	38624

Table S9. Effect of climate literacy and vulnerability on adaptive behavior
Results are OLS regressions, regressing the adaptation index on climate change literacy and its interaction with each measure of vulnerability. The first model includes the full adaptation index, while the second only includes moving in response to climate change. The third model includes non-agricultural adaptive measures (changing outdoor work and water sources) while the final model includes the most agriculturally relevant adaptive measures (changing grazing patterns/livestock and types of crops planted). Note that while the literacy and lived poverty interaction term is not significant, there are significant differences in the effect of literacy at the highest levels of lived poverty (see Figure 2 and [1]). The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	Full Index	Migration	Non-Ag.	Ag.
Climate Literate	0.619***	0.076*	0.230***	0.325**
	(0.169)	(0.032)	(0.066)	(0.102)
Low Lived Poverty	0.281***	0.044***	0.118**	0.120**
	(0.080)	(0.012)	(0.040)	(0.037)
Moderate Lived Poverty	0.425***	0.077***	0.188***	0.162***
	(0.079)	(0.013)	(0.046)	(0.034)
High Lived Poverty	0.623***	0.109***	0.306***	0.210***
	(0.088)	(0.016)	(0.052)	(0.034)
Climate Literate x Low	0.008	-0.005	0.012	-0.009
Lived Poverty	(0.079)	(0.019)	(0.044)	(0.034)
Climate Literate x	0.072	0.011	0.017	0.033
Moderate Lived Poverty	(0.061)	(0.018)	(0.038)	(0.031)
Climate Literate x High	0.051	0.022	-0.005	0.023
Lived Poverty	(0.076)	(0.020)	(0.048)	(0.037)
Droughts Worse	0.353***	0.011	0.196***	0.148***
	(0.059)	(0.013)	(0.034)	(0.029)
Floods Worse	-0.019	0.055***	-0.051	-0.024
	(0.067)	(0.013)	(0.042)	(0.027)
Crop Failure	0.209***	-0.030*	0.086**	0.153***
	(0.047)	(0.012)	(0.027)	(0.028)
Age: 26-35	-0.098**	-0.018**	-0.027*	-0.053**
	(0.031)	(0.007)	(0.014)	(0.017)
Age: 36-45	-0.143***	-0.039***	-0.034*	-0.071***
	(0.034)	(0.009)	(0.014)	(0.020)
Age: 46-55	-0.167***	-0.056***	-0.041*	-0.069***
	(0.038)	(0.009)	(0.019)	(0.020)
Age: 55+	-0.194***	-0.077***	-0.021	-0.098***
	(0.044)	(0.009)	(0.022)	(0.023)
Woman	-0.056**	-0.009*	-0.010	-0.037***
	(0.017)	(0.004)	(0.010)	(0.008)
Traditional News Access	0.390***	0.041**	0.172***	0.177***
	(0.091)	(0.015)	(0.044)	(0.044)
New Media Access	0.170***	0.052***	0.105***	0.012

	(0.043)	(0.011)	(0.021)	(0.026)
Educ: Primary	-0.025	-0.017	-0.019	0.011
	(0.045)	(0.011)	(0.033)	(0.033)
Educ: Secondary	-0.126**	-0.033*	-0.049	-0.045
	(0.047)	(0.016)	(0.036)	(0.030)
Educ: Post-Secondary	-0.183**	-0.044*	-0.079	-0.057
	(0.071)	(0.019)	(0.043)	(0.043)
Asset Index	0.025**	0.002	0.009	0.014***
	(0.009)	(0.002)	(0.005)	(0.004)
Household Connectivity=1	-0.136*	-0.038***	-0.046	-0.050
	(0.061)	(0.011)	(0.026)	(0.038)
Household Connectivity=2	-0.115	-0.019	-0.012	-0.078
	(0.087)	(0.016)	(0.040)	(0.055)
Household Connectivity=3	-0.152	-0.050*	-0.005	-0.091
	(0.127)	(0.020)	(0.064)	(0.063)
Climate Literate x	-0.073	0.013	0.017	-0.105***
Household Connectivity=1	(0.053)	(0.011)	(0.034)	(0.026)
Climate Literate x	-0.083	0.028	0.024	-0.138***
Household Connectivity=2	(0.067)	(0.017)	(0.046)	(0.033)
Climate Literate x	-0.283***	-0.014	-0.093*	-0.183***
Household Connectivity=3	(0.077)	(0.017)	(0.040)	(0.041)
Agriculture Employment	0.054	-0.010	-0.019	0.083**
	(0.037)	(0.009)	(0.014)	(0.027)
Rural	0.218**	-0.029*	0.056	0.192***
	(0.068)	(0.013)	(0.033)	(0.033)
Neighborhood Services=1	-0.079	-0.021	0.002	-0.062*
	(0.058)	(0.023)	(0.034)	(0.029)
Neighborhood Services=2	-0.097	-0.026	-0.053	-0.019
	(0.064)	(0.020)	(0.036)	(0.034)
Neighborhood Services=3	-0.140*	-0.028	-0.067	-0.046
	(0.065)	(0.027)	(0.047)	(0.038)
Neighborhood Services=4	-0.151	-0.040	-0.087	-0.023
	(0.089)	(0.025)	(0.051)	(0.046)
Neighborhood Services=5	-0.168*	-0.031	-0.082	-0.051
	(0.081)	(0.023)	(0.059)	(0.036)
Neighborhood Services=6	-0.180*	-0.034	-0.093	-0.051
	(0.083)	(0.023)	(0.049)	(0.043)
Neighborhood Services=7	-0.172	-0.038	-0.106	-0.029
	(0.094)	(0.026)	(0.058)	(0.046)
Neighborhood Services=8	-0.207*	-0.063*	-0.117	-0.027
	(0.103)	(0.026)	(0.064)	(0.050)
Neighborhood Services=9	-0.179	-0.052	-0.121	-0.006
	(0.122)	(0.029)	(0.065)	(0.066)
Neighborhood Services=10	-0.171	-0.048	-0.099	-0.021
	(0.152)	(0.031)	(0.086)	(0.067)
Neighborhood Services=11	-0.116	-0.049	-0.094	0.035

	(0.130)	(0.029)	(0.073)	(0.070)
Neighborhood Services=12	-0.171	-0.044	-0.071	-0.049
	(0.121)	(0.032)	(0.074)	(0.054)
Climate Literate x	-0.294	-0.036	-0.141	-0.115
Neighborhood Services=1	(0.150)	(0.037)	(0.073)	(0.081)
Climate Literate x	-0.452**	-0.087**	-0.169*	-0.195*
Neighborhood Services=2	(0.167)	(0.029)	(0.069)	(0.099)
Climate Literate x	-0.385*	-0.079*	-0.142*	-0.162
Neighborhood Services=3	(0.171)	(0.034)	(0.066)	(0.102)
Climate Literate x	-0.532**	-0.099**	-0.214**	-0.220
Neighborhood Services=4	(0.192)	(0.032)	(0.072)	(0.114)
Climate Literate x	-0.431*	-0.070*	-0.155*	-0.209
Neighborhood Services=5	(0.177)	(0.028)	(0.064)	(0.109)
Climate Literate x	-0.435*	-0.079*	-0.192**	-0.166
Neighborhood Services=6	(0.192)	(0.031)	(0.070)	(0.118)
Climate Literate x	-0.485**	-0.086**	-0.183**	-0.214*
Neighborhood Services=7	(0.179)	(0.030)	(0.068)	(0.107)
Climate Literate x	-0.381	-0.062	-0.145	-0.173
Neighborhood Services=8	(0.195)	(0.034)	(0.075)	(0.114)
Climate Literate x	-0.387*	-0.054	-0.163*	-0.169
Neighborhood Services=9	(0.175)	(0.036)	(0.073)	(0.107)
Climate Literate x	-0.330	-0.070	-0.141	-0.123
Neighborhood Services=10	(0.191)	(0.036)	(0.080)	(0.114)
Climate Literate x	-0.340	-0.077*	-0.109	-0.167
Neighborhood Services=11	(0.209)	(0.036)	(0.079)	(0.129)
Climate Literate x	-0.251	-0.076*	-0.100	-0.049
Neighborhood Services=12	(0.176)	(0.036)	(0.085)	(0.110)
Constant	0.466**	0.181***	0.257**	0.025
	(0.165)	(0.036)	(0.092)	(0.078)
Observations	38624	38721	38714	38685

Table S10. Alternative vulnerability specifications

Results are OLS regressions, regressing the adaptation index on climate change literacy, and in the second model its interaction with each measure of vulnerability. Here we use alternative measures of vulnerability. In the asset index, we exclude bank accounts and mobile money accounts as they are access to a financial service rather than a store of value. In the household utilities measure, instead of water location we use quality of water access. In the additive index, when it comes to water respondents are coded as 1 if they have piped public or community water system, tubewell or borehole, dug well that is protected, spring that is protected, bottled water, or water purchased from a cart or truck and a 0 otherwise. For neighborhood services, we exclude post offices as they are rarely found in the enumeration area. Results are robust to all alternative specifications. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	(1)	(2)
Climate Literate	0.159***	0.533**
	(0.025)	(0.175)
Low Lived Poverty	0.287***	0.271***
	(0.064)	(0.080)
Moderate Lived Poverty	0.484***	0.413***
	(0.070)	(0.077)
High Lived Poverty	0.683***	0.607***
	(0.068)	(0.086)
Droughts Worse	0.230***	0.352***
	(0.054)	(0.059)
Floods Worse	0.056	-0.023
	(0.045)	(0.066)
Crop Failure	0.173***	0.205***
	(0.041)	(0.049)
Age: 26-35	-0.056*	-0.089**
	(0.025)	(0.030)
Age: 36-45	-0.098***	-0.133***
	(0.026)	(0.033)
Age: 46-55	-0.113***	-0.162***
	(0.033)	(0.038)
Age: 55+	-0.163***	-0.192***
	(0.035)	(0.043)
Woman	-0.061***	-0.061***
	(0.014)	(0.016)
Traditional News Access	0.375***	0.390***
	(0.053)	(0.093)
New Media Access	0.158***	0.177***
	(0.032)	(0.042)
Educ: Primary	-0.038	-0.016
	(0.034)	(0.046)

Educ: Secondary	-0.073	-0.114*
	(0.040)	(0.047)
Educ: Post-Secondary	-0.130**	-0.162*
	(0.046)	(0.071)
Asset Index	0.027***	0.028**
	(0.008)	(0.009)
House Connectivity=1	0.027	0.031
	(0.029)	(0.036)
House Connectivity=2	-0.072	-0.108
	(0.040)	(0.069)
House Connectivity=3	-0.143*	-0.121
	(0.059)	(0.124)
Agriculture Employment	0.060*	0.056
	(0.029)	(0.037)
Rural	0.192***	0.214**
	(0.037)	(0.069)
Neighborhood Services=1	-0.086	-0.078
	(0.067)	(0.059)
Neighborhood Services=2	-0.146*	-0.090
	(0.072)	(0.063)
Neighborhood Services=3	-0.166*	-0.128
	(0.077)	(0.067)
Neighborhood Services=4	-0.242**	-0.147
	(0.076)	(0.086)
Neighborhood Services=5	-0.224**	-0.156
	(0.081)	(0.080)
Neighborhood Services=6	-0.203**	-0.164*
	(0.079)	(0.083)
Neighborhood Services=7	-0.262**	-0.170
	(0.083)	(0.094)
Neighborhood Services=8	-0.220*	-0.204
	(0.091)	(0.112)
Neighborhood Services=9	-0.247**	-0.159
	(0.083)	(0.129)
Neighborhood Services=10	-0.259**	-0.116
	(0.100)	(0.143)
Neighborhood Services=11	-0.352***	-0.150
	(0.098)	(0.131)
Climate Literate x Low Lived Poverty		0.037
		(0.079)
Climate Literate x Moderate Lived Poverty		0.103
		(0.061)
Climate Literate x High Lived Poverty		0.089
		(0.078)
Climate Literate x House Connectivity=1		0.075
		(0.071)

Climate Literate x House Connectivity=2		-0.001 (0.071)
Climate Literate x House Connectivity=3		-0.143 (0.088)
Climate Literate x Neighborhood Services=1		-0.275 (0.143)
Climate Literate x Neighborhood Services=2		-0.456** (0.166)
Climate Literate x Neighborhood Services=3		-0.392* (0.164)
Climate Literate x Neighborhood Services=4		-0.538** (0.188)
Climate Literate x Neighborhood Services=5		-0.451** (0.170)
Climate Literate x Neighborhood Services=6		-0.437* (0.178)
Climate Literate x Neighborhood Services=7		-0.501** (0.171)
Climate Literate x Neighborhood Services=8		-0.372* (0.188)
Climate Literate x Neighborhood Services=9		-0.417* (0.170)
Climate Literate x Neighborhood Services=10		-0.345 (0.196)
Climate Literate x Neighborhood Services=11		-0.304 (0.180)
Constant	0.558*** (0.123)	0.481** (0.165)
Observations	39327	39327

Table S11. Effect of country-level disaster: Frequency & literacy

Results are OLS regressions, regressing the adaptation index on the mean number of each type of disaster at the country level in the previous 5, 10, 20, and 30 years interacted with climate change literacy. Fires are excluded from the 5- and 10-year analyses given fewer than four fires occurred. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	5 Year	10 Year	20 Year	30 Year
Climate Literate	0.195***	0.171***	0.148***	0.144***
	(0.040)	(0.042)	(0.041)	(0.040)
Mean Drought Frequency	0.457	0.557	1.030*	1.586***
	(0.370)	(0.416)	(0.510)	(0.472)
Climate Literate x Mean	-0.126	-0.006	-0.236	-0.382
Drought Frequency	(0.154)	(0.155)	(0.213)	(0.257)
Mean Flood Frequency	-0.096	-0.076	-0.099	-0.189
	(0.066)	(0.083)	(0.113)	(0.107)
Climate Literate x Mean	0.001	0.012	0.078	0.116
Flood Frequency	(0.037)	(0.037)	(0.048)	(0.061)
Mean Storm Frequency	-0.026	-0.061	-0.136	-0.245*
	(0.047)	(0.084)	(0.086)	(0.098)
Climate Literate x Mean	-0.055**	-0.101**	-0.067*	-0.056
Storm Frequency	(0.017)	(0.032)	(0.033)	(0.041)
Mean Fire Frequency	--	--	-0.079	0.665
			(1.051)	(0.653)
Climate Literate x Mean	--	--	-0.988	-0.813**
Fire Frequency			(0.518)	(0.286)
Droughts Worse	0.229***	0.231***	0.233***	0.232***
	(0.055)	(0.054)	(0.054)	(0.055)
Floods Worse	0.058	0.060	0.059	0.060
	(0.046)	(0.046)	(0.046)	(0.046)
Crop Failure	0.175***	0.174***	0.175***	0.175***
	(0.041)	(0.040)	(0.040)	(0.040)
Age: 26-35	-0.065*	-0.065*	-0.065*	-0.065*
	(0.026)	(0.026)	(0.026)	(0.026)
Age: 36-45	-0.105***	-0.106***	-0.106***	-0.106***
	(0.027)	(0.027)	(0.026)	(0.026)
Age: 46-55	-0.123***	-0.120***	-0.121***	-0.121***
	(0.032)	(0.032)	(0.032)	(0.032)
Age: 55+	-0.170***	-0.167***	-0.169***	-0.169***
	(0.035)	(0.035)	(0.034)	(0.034)
Woman	-0.060***	-0.057***	-0.057***	-0.056***
	(0.015)	(0.015)	(0.015)	(0.015)
Traditional News Access	0.375***	0.368***	0.364***	0.364***
	(0.051)	(0.051)	(0.051)	(0.051)
New Media Access	0.145***	0.143***	0.144***	0.143***

	(0.033)	(0.032)	(0.032)	(0.032)
Educ: Primary	-0.050	-0.048	-0.047	-0.048
	(0.033)	(0.033)	(0.033)	(0.033)
Educ: Secondary	-0.091*	-0.087*	-0.088*	-0.087*
	(0.039)	(0.039)	(0.039)	(0.039)
Educ: Post-Secondary	-0.155**	-0.152**	-0.153**	-0.153**
	(0.048)	(0.047)	(0.047)	(0.047)
Low Lived Poverty	0.292***	0.283***	0.282***	0.282***
	(0.067)	(0.065)	(0.065)	(0.065)
Moderate Lived Poverty	0.490***	0.481***	0.479***	0.479***
	(0.071)	(0.070)	(0.070)	(0.070)
High Lived Poverty	0.694***	0.684***	0.681***	0.682***
	(0.070)	(0.069)	(0.069)	(0.069)
Asset Index	0.024***	0.024***	0.024***	0.024***
	(0.006)	(0.006)	(0.006)	(0.006)
Household Connectivity	-0.063**	-0.064**	-0.064**	-0.063**
	(0.020)	(0.019)	(0.020)	(0.019)
Agriculture Employment	0.063*	0.066*	0.067*	0.068*
	(0.029)	(0.029)	(0.029)	(0.029)
Rural	0.193***	0.192***	0.191***	0.191***
	(0.038)	(0.038)	(0.038)	(0.038)
Neighborhood Services	-0.020**	-0.020**	-0.020**	-0.020**
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	0.476***	0.452**	0.440**	0.425**
	(0.136)	(0.139)	(0.144)	(0.139)
Observations	38042	38624	38624	38624

Table S12. Effect of climate trends: Frequency & literacy

Results are OLS regressions, regressing the adaptation index on 30-year climate trends interacted with climate change literacy. Drought is operationalized using SPI. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. There are fewer than 100 instances where temperature significantly decreased in the previous 30 years. These respondents have been recoded as living in locations with decreases in temperature. Results are robust to excluding these few respondents. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	Temperature	Precipitation	Drought
Climate Literate	0.120	0.127***	0.141*
	(0.081)	(0.033)	(0.071)
Sig. Decrease	--	0.071	0.272
		(0.082)	(0.210)
Decrease	-0.341***	-0.075	0.117
	(0.052)	(0.048)	(0.088)
Sig. Increase	0.087	-0.047	0.094
	(0.074)	(0.040)	(0.100)
Increase	0.093	-0.030	0.111
	(0.085)	(0.079)	(0.100)
Climate Literate x Sig.	--	0.026	0.064
Decrease		(0.087)	(0.160)
Climate Literate x	0.575***	0.012	-0.005
Decrease	(0.137)	(0.053)	(0.090)
Climate Literate x Increase	0.048	0.094	0.050
	(0.089)	(0.050)	(0.082)
Climate Literate x Sig.	0.033	0.054	0.002
increase	(0.097)	(0.116)	(0.082)
Droughts Worse	0.219***	0.227***	0.220***
	(0.054)	(0.054)	(0.054)
Floods Worse	0.074	0.066	0.075
	(0.042)	(0.042)	(0.042)
Crop Failure	0.177***	0.180***	0.177***
	(0.041)	(0.040)	(0.041)
Age: 26-35	-0.065*	-0.065*	-0.065*
	(0.026)	(0.027)	(0.026)
Age: 36-45	-0.107***	-0.108***	-0.106***
	(0.027)	(0.027)	(0.027)
Age: 46-55	-0.123***	-0.125***	-0.123***
	(0.032)	(0.033)	(0.032)
Age: 55+	-0.169***	-0.169***	-0.168***
	(0.035)	(0.035)	(0.035)
Woman	-0.061***	-0.061***	-0.060***
	(0.015)	(0.015)	(0.015)
Traditional News Access	0.375***	0.372***	0.376***
	(0.049)	(0.049)	(0.049)

New Media Access	0.145***	0.144***	0.147***
	(0.033)	(0.032)	(0.033)
Educ: Primary	-0.051	-0.050	-0.049
	(0.033)	(0.033)	(0.033)
Educ: Secondary	-0.089*	-0.088*	-0.088*
	(0.039)	(0.039)	(0.038)
Educ: Post-Secondary	-0.150**	-0.151**	-0.149**
	(0.048)	(0.047)	(0.048)
Low Lived Poverty	0.282***	0.282***	0.283***
	(0.069)	(0.068)	(0.068)
Moderate Lived Poverty	0.482***	0.481***	0.481***
	(0.073)	(0.072)	(0.072)
High Lived Poverty	0.687***	0.683***	0.686***
	(0.071)	(0.070)	(0.071)
Asset Index	0.024***	0.024***	0.024***
	(0.006)	(0.006)	(0.006)
Household Connectivity	-0.065**	-0.065**	-0.063**
	(0.020)	(0.021)	(0.020)
Agriculture Employment	0.064*	0.064*	0.063*
	(0.029)	(0.029)	(0.029)
Rural	0.188***	0.190***	0.189***
	(0.039)	(0.040)	(0.038)
Neighborhood Services	-0.020**	-0.020**	-0.020**
	(0.007)	(0.007)	(0.007)
Constant	0.375**	0.484***	0.356*
	(0.131)	(0.125)	(0.160)
Observations	37929	37929	37929

Table S13. Correlates of climate change literacy

Results are linear probability models, regressing climate change literacy on socio-demographic characteristics (first model) and climate trends (models 2-4). Drought is operationalized using SPI. The omitted base category for age is 18-25, for education is no formal schooling, for urban is peri-urban or rural, and for lived poverty is no lived poverty. There are fewer than 100 instances where temperature significantly decreased in the previous 30 years or where drought significantly increased. These respondents have been recoded as living in locations with decreases in temperature or increases in drought. Results are robust to excluding these few respondents. Random effects are at the country level. Standard errors clustered at the country level are in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

	No Trends	Temperature	Precipitation	Drought
Droughts Worse	0.031**	0.032**	0.033**	0.032**
	(0.011)	(0.011)	(0.012)	(0.012)
Floods Worse	0.008	0.008	0.008	0.008
	(0.012)	(0.012)	(0.012)	(0.012)
Crop Failure	0.017	0.016	0.016	0.015
	(0.011)	(0.011)	(0.011)	(0.011)
Age: 26-35	-0.003	-0.002	-0.002	-0.002
	(0.006)	(0.006)	(0.006)	(0.006)
Age: 36-45	0.012	0.012	0.012	0.012
	(0.007)	(0.007)	(0.007)	(0.007)
Age: 46-55	0.022*	0.022*	0.022*	0.022*
	(0.010)	(0.010)	(0.010)	(0.010)
Age: 55+	0.047***	0.047***	0.047***	0.047***
	(0.011)	(0.011)	(0.011)	(0.011)
Woman	-0.048***	-0.047***	-0.047***	-0.047***
	(0.005)	(0.005)	(0.005)	(0.005)
Traditional News Access	0.105***	0.104***	0.104***	0.104***
	(0.021)	(0.021)	(0.021)	(0.021)
New Media Access	0.096***	0.099***	0.098***	0.099***
	(0.013)	(0.013)	(0.013)	(0.013)
Educ: Primary	0.050***	0.050***	0.050***	0.050***
	(0.011)	(0.011)	(0.011)	(0.011)
Educ: Secondary	0.131***	0.129***	0.130***	0.130***
	(0.012)	(0.012)	(0.012)	(0.012)
Educ: Post-Secondary	0.206***	0.207***	0.209***	0.208***
	(0.016)	(0.017)	(0.016)	(0.017)
Low Lived Poverty	0.016	0.015	0.015	0.016
	(0.010)	(0.011)	(0.011)	(0.011)
Moderate Lived Poverty	0.023	0.023	0.022	0.023
	(0.015)	(0.016)	(0.016)	(0.016)
High Lived Poverty	0.009	0.008	0.007	0.008
	(0.016)	(0.017)	(0.017)	(0.017)
Asset Index	0.007***	0.007***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)
Household Connectivity	0.020***	0.019***	0.018***	0.020***

	(0.005)	(0.005)	(0.005)	(0.005)
Agriculture Employment	0.002	0.004	0.005	0.004
	(0.008)	(0.008)	(0.008)	(0.008)
Rural	0.010	0.010	0.009	0.010
	(0.008)	(0.008)	(0.008)	(0.008)
Neighborhood Services	0.000	-0.000	0.000	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)
10-Year	--	0.014	-0.014	-0.002
Sig. Decrease		(0.020)	(0.023)	(0.057)
Decrease	--	-0.019	-0.003	-0.020
		(0.014)	(0.017)	(0.027)
Increase	--	-0.010	0.007	-0.035
		(0.014)	(0.020)	(0.023)
Sig. Increase	--	-0.001	0.073	-0.052
		(0.024)	(0.059)	(0.030)
30-Year	--	--	-0.022	0.018
Sig. Decrease			(0.017)	(0.042)
Decrease	--	0.054	-0.018	0.022
		(0.054)	(0.010)	(0.037)
Increase	--	0.034	0.014	0.026
		(0.024)	(0.015)	(0.039)
Sig. Increase	--	0.036	0.017	--
		(0.023)	(0.030)	
Constant	0.068	0.046	0.070	0.083
	(0.036)	(0.039)	(0.040)	(0.061)
Observations	38764	38067	38067	38067

Table S14: Factor analysis of adaptation index

Results from principal factor analysis for each item on the adaptation index. Items include whether respondents or their families have done each of the following in the previous five years: "Change the source or reduce the amount of water that you use"; "Reduce the amount of work you do outdoors or work outdoors at different times"; "Move to another place"; "Changed grazing patterns or reduced the number and type of livestock you keep"; and "Changed the types of crops you plant or the types of food you eat.

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	1.35	1.12	1.24	1.24
Factor 2	0.23	0.31	0.21	1.46
Factor 3	-0.08	0.02	-0.07	1.39
Factor 4	-0.20	0.02	-0.19	1.20
Factor 5	-0.22	--	-0.20	1.00

Factor loadings, uniqueness, and variance.

Variable	Factor 1	Factor 2	Uniqueness
Water Source	0.57	-0.19	0.64
Outdoor Work	0.57	-0.20	0.63
Move	0.40	-0.13	0.82
Livestock	0.52	0.26	0.66
Crops	0.52	0.27	0.66

Supplementary Information: Literature on climate change literacy and adaptation

Methods

Using Web of Science and Scopus to search for evidence of the effects of climate change literacy on adaptation in research articles between 2015-2026 the following search string was used: climate change (Topic) AND climate change literacy (Topic) OR climate literacy (All Fields) AND adaptation (Topic). The search yielded 1720 articles (WoS n=1427; Scopus n=293) which were then screened down through a priority screening of article abstracts to three groups of articles with high (4.4%; n=63), medium (44.1%; n=630), low (34.3%; n=489) likelihood of relevance to the research question. Articles identified to be both medium and high received second stage screening to identify the final 63 articles for full text coding.

We synthesised evidence from 63 full-text studies on the relationship between climate change literacy and adaptation, defined to include adaptive behaviour, implementation, planning and outcomes. This search included a broad definition of climate change literacy to include climate related knowledge, awareness, understanding, perceptions and related competencies. We found meta-analysis was not feasible due to too few extractable, commensurable effects and serious risk-of-bias and construct heterogeneity. We review the overall body of evidence, and for quantitative studies the effect direction rather than statistical significance, reporting the proportion of studies with positive, mixed, null or negative directions. We present overall and subgroup results by world region, sector, and population group, restricting graphical displays to strata with sufficient studies to avoid unstable estimates. The corpus spans 37 distinct country/region labels (excluding explicit “Global/Multi-region” entries), ranging from single-country settings such as China, Egypt, Bangladesh, Rwanda, Ethiopia, Ghana, Chile, Canada, Germany, Australia, Fiji to sub-regional contexts like Sub-Saharan Africa, alongside several global/multi-region syntheses.

To evaluate more specifically the state of evidence linking climate change literacy and to adaptation outcomes, we developed an empirically grounded typology based on two analytical dimensions. The typology interrogates the nature of the adaptation outcome variable and the presence and form of any statistical test connecting climate change literacy or climate change education to that outcome. The typology was not constructed deductively from theoretical frameworks but was induced iteratively through close reading of each paper's dependent variable specification, analytical method, and the inferential claims made by authors. We drew a principled distinction, consistent with behaviour-change theory, between observable, implemented responses to climate risk (enacted adaptation)[2] and its more distal precursors such as behavioural intention, pro-environmental attitude, climate concern, and awareness. The resulting five-type classification (Types A–E, Table S15) captures a gradient of evidentiary proximity from climate change literacy to enacted adaptation and enables systematic discrimination between papers that empirically demonstrate a climate change literacy–adaptation link and those that hypothesise or assume it.

Table S15. Typology of research on the effects of climate change literacy on adaptation (n=63)

TYPE	DESCRIPTION	COUNT
Type A	Studies that statistically test whether climate change literacy, or an operationalised proxy thereof, predicts enacted, implemented adaptation behaviours	4 papers (6.3%)
Type B	Studies that statistically predict the effects of climate change literacy on the intention to adapt, without follow-up evidence of implemented adaptation.	2 papers (3.2%)
Type C	Studies that statistically predict the effects of climate change literacy on opinions, attitudes, concern, or policy support toward climate adaptation.	10 papers (15.9%)
Type D	Studies whose primary outcome is knowledge, awareness, or skills acquisition from climate change literacy/climate change education programmes, with no adaptation behaviour measured, intended or enacted	37 papers (58.7%)
Type E	Studies that describe adaptation practices occurring in populations where climate change literacy levels are also characterised but that conduct no formal statistical test linking climate change literacy to adoption	10 papers (15.9%)

Type A comprises studies that statistically test whether climate change literacy, or an operationalised proxy thereof, predicts implemented adaptation behaviours. This is the highest evidentiary tier in the typology and is the category most directly relevant to claims that climate change literacy drives adaptation in practice. Four studies in the corpus meet this criterion, each discussed in detail below. Type B comprises studies that test the statistical relationship between climate change literacy or climate change education and behavioural intention to adapt. This is considered a proximal but distinct outcome that precedes, and does not guarantee, enacted behaviour. Type C comprises studies that measure climate change literacy in relation to opinion, attitude, climate concern, or policy support, and that conduct some statistical test of that association. These papers provide evidence for a climate change literacy–attitude link but make no empirical claim about adaptation behaviour. Type D is the largest category, encompassing 37 of 63 studies (58.7%) and comprises papers whose primary outcome is knowledge, awareness, or skills acquisition from climate change literacy/climate change education programmes, with no adaptation behaviour measured. Type E comprises papers that describe adaptation practices occurring in populations where climate change literacy levels are also characterised but that conduct no formal statistical test linking climate change literacy to adoption.

Results

Across the corpus the face value direction of association is consistently positive across quantitative, qualitative and framework studies. Of 63 studies, 56 (88.9%) indicate that climate change literacy positively affects adaptation. Although the corpus spans multiple regions, only 18 of 63 studies report extractable sample sizes and just five meet a large-sample threshold (≥1,000), with no multi-country study also reporting a large N. This creates an evidentiary profile that limits precision and external validity. When restricting to the adaptation-only subset that excludes any conflation with mitigation outcomes (n = 46), the proportion remains essentially unchanged at 89.1%, indicating that the central pattern does not depend on how studies handle the adaptation–mitigation boundary. No study reports a negative association between literacy and adaptation.

The four Type A studies constitute the limited direct empirical evidence in this literature that climate change literacy statistically predicts enacted adaptation action. Three of the four are cross-sectional household surveys conducted with smallholder farmers in Sub-Saharan Africa and South Asia, using general educational attainment (years of schooling or basic read/write literacy) as their climate change literacy proxy. The fourth is a controlled pre-post educational intervention measuring health-protective behaviours in older adults. Despite representing the strongest evidence tier in the typology, all four carry methodological characteristics that limit the inferential claims that can be drawn from them. Niyibigira et al.[3], Sertse et al.[4], and Baten et al.[5] each employ logistic or binary regression frameworks to test whether proxies for climate change literacy including education level or basic literacy predicts adoption of climate-smart agricultural practices among smallholder farming households (including changed planting dates, drought-tolerant crop variety substitution, adoption of irrigation, and agroforestry practices). In all three cases, educational attainment or literacy attains statistical significance as a predictor of climate smart agriculture adoption at conventional thresholds ($p<0.05$). However, the critical limitation of all three is the construct validity of the climate change literacy proxy they use. Years of schooling are not validated measures of climate change literacy as defined in the contemporary climate change literacy literature[6–8]. General education shapes adaptation adoption through a wide range of plausible mechanisms and the available designs cannot partition the climate change literacy-specific mechanism from these alternatives. Mechanisms include increased access to extension services, higher baseline income, stronger social networks, greater comfort with novel information, and reduced risk aversion[4,9–14].

Mahmoud et al.[15] is the only study in the corpus to deploy an explicit climate change education intervention and to measure enacted adaptation outcomes at follow-up, making it qualitatively distinct from the agricultural cross-sectional evidence. In a quasi-experimental pre-post design administered to 84 older adults in Cairo, Egypt, a structured climate change education programme significantly increased both climate change literacy scores and, critically, self-reported enactment of climate-adaptive health behaviours. They look at implementation of heatwave protective measures and vector-borne disease prevention practices.

The two Type B studies[16,17] provide evidence by demonstrating that climate change literacy or climate change education can shift behavioural intention, treating it as the most proximal cognitive precursor to behaviour. Thabane et al.[17] reports that ‘climate change knowledge’ (their proxy for climate change literacy) significantly predicts intention to adopt climate-smart agricultural practices among smallholder farmers in South Africa. Kreslake et al.[16] apply a quasi-experimental design to test whether a climate change education intervention shifts intention to undertake protective health behaviours among a community sample in the United States, finding significant pre-to-post increases. Both studies are important as they demonstrate that climate change literacy and climate change education moves the needle not just on abstract awareness but on the decision-proximal cognitions that, in well-functioning behavioural systems, can translate into action. Kreslake et al.[16] is additionally notable for being conducted in a developed-country, health-sector context, providing a point of comparison with Mahmoud et al.[15] that suggests climate change education–intention effects may be generalisable beyond the agricultural smallholder setting that dominates the Type A evidence.

Taken together, the Type A and Type B evidence supports the characterisation of climate change literacy and climate change education as contributing to the cognitive conditions for adaptation, but the evidentiary base for the full pathway from climate change education to enacted adaptation remains narrow, geographically circumscribed, and methodologically limited to small quasi-experimental samples or cross-sectional designs using education-level proxies for climate change literacy.

The ten Type C studies establish a robust cross-contextual association between climate change literacy and pro-climate attitudes but do not extend to enacted adaptation. Pan et al.[18], Kolenatý et al.[19], and Tan et al.[20] use survey or structural equation modelling designs to each demonstrate that climate change knowledge or climate change literacy positively predicts environmental concern, pro-adaptation attitude, or mitigation intention. Yang et al.[21] and Azhari et al.[22] report similar associations in Chinese and other national contexts. Tan et al.[20] go furthest by modelling a knowledge-to-attitude-to-intention pathway using a stimulus-organism-behaviour-consequence framework, but their outcome variable remains intention, not implemented adaptation. Importantly, Yi et al.[9], a large-scale survey of 24,303 farmers and herders on the Tibetan Plateau, provides the most powerful counter-example in the corpus to the assumption that education linearly predicts climate change perception or adaptive confidence. In their study education attainment was not a significant predictor of climate change perception or self-assessed adaptive capacity in this predominantly low-literacy population, where income, access to credit, and media trust were the dominant predictors. This finding cautions against treating the climate change literacy–attitude association as universal or context-independent. None of the Type C papers measure enacted adaptation outcomes and any connection to actual behaviour change is conjectural.

The 37 Type D studies represent the dominant mode of climate change literacy and climate change education research and are characterised by programme evaluations, literacy assessment tool development, systematic reviews of educational interventions, and conceptual frameworks. All of these studies measured climate change literacy at the level of knowledge, awareness, or skills but do not empirically link these to implemented adaptation actions. Weinstein et al.[23], found statistically significant post-course gains in climate change literacy and health communication skills when evaluating a train-the-trainer climate change education programme in the Dominican Republic. Álvarez-Berríos et al.[24], document significant pre-to-post self-assessed knowledge gains and high stated likelihood of implementation when reporting on the USDA Climate-Smart Caribbean Workshops for Puerto Rican agricultural and forestry producers, but acknowledge that "measuring the extent of these implemented changes...is often difficult" and conduct no follow-up on enacted practice change. Wellman et al.[25] and Davies et al.[26] similarly evaluate climate change education programmes targeting youth, demonstrating knowledge and self-efficacy gains without adaptation behaviour outcomes. Conceptual contributions such as Feinstein & Mach[27] and Khoja et al.[28] theorise that general education and climate change education can enhance adaptive capacity through multiple pathways, though they do not empirically demonstrate these pathways.

The ten Type E studies are particularly challenging for synthesis because they describe enacted adaptation practices occurring in the same populations whose climate change literacy levels are simultaneously characterised, but do not empirically test the link between the two. Adu Boateng

et al.[29], in a survey of 367 residents in Kumasi, Ghana, document that 63% of respondents are climate illiterate and that nature-based solution (NbS) adoption for urban adaptation is occurring in the same population. Cobbinah et al.[30], studying Ghana's urban poor, describe both low climate change literacy levels and autonomous and planned adaptation responses. Leal Filho et al.[31], in a systematic review of adaptation responses to water scarcity across Africa, catalogue a range of enacted adaptation strategies and note climate change literacy as a likely necessary condition for their success. The same pattern appears in Maulu et al.[32], Touch et al.[33], and Ribeiro et al.[34].

Discussion

Taken together, the evidence establishes with reasonable confidence that higher climate change literacy is associated with greater climate adaptation across multiple domains. While direct experience with climate extremes triggers awareness, perception alone is often insufficient for behavioural change[35,36]. This corpus shows that adaptation is driven by an interplay of many factors beyond climate change literacy, including risk perception, socioeconomic capacity, and institutional support[9,18]. For example, in rural agricultural contexts, access to credit and extension services often matters more than awareness for adopting capital-intensive strategies[4]. Conversely, the wider literature on risk perception shows, in coastal regions for example, place attachment frequently outweighs rational risk assessments due to economic and heritage dependence, can drive resistance to adaptation options like relocation despite high awareness of climate change and the risks it poses[37]. These variances are vital for climate change literacy programmes, which must shift from basic knowledge transfer to building self-efficacy and integrating local knowledges, professional and practitioner knowledges, and Indigenous Knowledges to ensure relevance[19,38]. They also highlight that effective adaptation planning must address structural barriers rather than assuming knowledge leads automatically to implemented adaptation, particularly for groups that face higher adaptation burdens that are linked to higher exposure, vulnerability and institutional exclusion such as low-income groups, migrants, women, children[8,9,30,39–42].

Supplementary Information: Afrobarometer question wording and coding
Note: Full codebooks and questionnaires for the Afrobarometer are available on the Afrobarometer website, https://www.afrobarometer.org/surveys-and-methods/survey-resources/

Adaptation index: Our primary independent variable is an additive index ranging from 0-5. All respondents were given a list of actions people have had to take because of climate changes or changing weather and were asked to indicate whether they or their family have had to do any of them in the previous five years. Actions include: "Change the source or reduce the amount of water that you use"; "Reduce the amount of work you do outdoors or work outdoors at different times"; "Move to another place"; "Changed grazing patterns or reduced the number and type of livestock you keep"; and "Changed the types of crops you plant or the types of food you eat." To calculate the index, for each item respondents receive a score of 1 if they indicate they or their family have taken the action, and 0 if not or respondents state they "don't know".

Climate change literacy: Climate change literacy is our primary independent variable. Respondents were first asked "Have you heard about climate change or haven't you had the chance to hear about this yet?" The response options were "no," "yes," or "don't know." If respondents answered yes, they were then asked "People have different ideas about what causes climate change. What about you, which of the following do you think is the main cause of climate change, or haven't you heard enough to say?" The response options were "human activity, like burning fuel and other activities that pollute the atmosphere," "natural processes," "both human activity and natural processes," "none of these," and "don't know." The variable is coded as 1 for climate change literate if respondents both indicated they had heard about climate change and indicated it was caused by human activity or both human activity and natural processes. Otherwise, the variable is coded as 0.

Drought, flood, and crop failure perceptions: Respondents were asked: "In your experience, over the past 10 years, has there been any change in the severity of the following events in the area where you live? Have they become more severe, less severe, or stayed about the same?" and were asked about droughts, flooding, and crop failure. Response options ranged from much more severe to much less severe on a 5-point scale. We reverse coded and re-scaled their answers such that 0 indicates respondents believe the event of interest has gotten much less severe while 1 indicates they believe the event has gotten much more severe. Don't know responses were recoded as missing.

Age: Respondents were asked "How old are you?" We recoded age as an ordinal variable as follows: 0 if respondents are 18-25, 1 if respondents are 26-35, 2 if respondents are 36-45, 3 if respondents are 46-55, and 4 if respondents are 56 or older.

Woman: Women were coded as 1 and males as 0. The interviewer indicated the gender of the respondent at the conclusion of the interview.

News Access: Respondents were asked "How often do you get news from the following sources?" and given a list of several news sources. Response options included (4) every day, (3) a few times a week, (2) a few times a month, (1) less than once a month, or (0) never. Those who indicated don't know were coded as missing. To generate the **traditional news** scale, we

summed responses to radio, television, and print newspaper, dividing the scale by 12 to generate a 0-1 scale. To generate the **new media** scale, we summed responses to internet and social media such as Facebook, Twitter, WhatsApp, or other, and divided by 8 to generate a 0-1 scale.

Education: Respondents were asked "What is your highest level of education?" They were not given response options, but their level of education was coded based on their open-ended response. Respondents were coded as follows: 0 for no formal schooling, 1 for some or completed primary schooling, 2 for some or completed secondary schooling, and 3 for some or completed post-secondary schooling including university, post-graduate, or post-secondary qualifications other than university degree.

Lived Poverty Index (LPI): This additive index is based on five questions, where respondents were asked "Over the past year, how often, if ever, have you or anyone in your family gone without: 1) enough food to eat, 2) enough clean water for home use, 3) medicines or medical treatment, 4) enough fuel to cook your food, 5) a cash income?" Response options included (0) "Never," (1) "Just once or twice," (2) "Several times," (3) "Many times," and (4) "Always." The "don't know" responses were recoded as missing. The responses to each of the five questions were summed and then divided by five to create an index that ranges from 0 to 4.

Asset index: Respondents were asked "Which of these things do you personally own?" For each item where respondents said no, they were then asked, "Does anyone else in your household own one?" An index summing up whether they or someone in their house owns a: Radio; television; motor vehicle or motorcycle; computer; bank account; mobile phone; mobile money account.

Household utilities: This additive index ranges from 0-3, counting whether respondents have access to electricity, a latrine, and running water. For electricity, respondents were asked "Do you have an electric connection to your home?" If yes, they were asked "How often is electricity actually available from this connection?" Response options include "never," "occasionally," "about half of the time," "most of the time," "all of the time." Respondents who have electricity at least about half of the time are coded as having access to electricity in the index.

For water and a latrine, respondents were told "Please tell me whether each of the following is available inside your house, inside your compound, or outside your compound:" and were asked about "a toilet or latrine" and "your main source of water for household use." Response options include "none," "inside the house," "inside the compound," or "outside the compound." Respondents were coded as having a latrine and water access if they had each inside of the house.

Neighborhood services: The neighborhood services index is an additive index tracking if the enumerator observes that the following services are present: Electricity most houses can access, piped water most houses can access, sewage most houses can access, mobile phone service, a post office, a school, a police station, a health clinic, market stalls, a bank or ATM, a social center or government office where people can request help, and paid transport service (e.g., a bus) that is available on a daily basis. The index ranges from 0-12, with respondents receiving an additional point for each of the above which are present.

Enumerators were instructed to identify these services by moving around their enumerator area, checking the availability of infrastructure themselves as well as consulting with local people and leadership.

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