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## Climate change literacy and migration potential: micro-level evidence from Africa

Climatic Change

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1 **Supplementary Material**

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	N	Mean	SD	Min	Max
Migration intentions	37,673	0.354	0.478	0	1
WSDI annual trend, 1979–2016	37,673	0.345	0.354	-0.31	2.83
WSDI annual trend, 2009–2016	37,086	2.197	3.499	-8.52	17.19
WSDI change	37,673	9.388	10.384	-7.38	81.55
WSDI 10-year average	37,673	14.062	9.657	0	76
WSDI 3-year average	37,673	0.218	0.175	0	1.32
HWM 10-year average	37,673	1.182	1.367	0.14	13.41
SPEI 3-year average	37,673	-0.406	0.645	-3.16	1.79
Climate literacy	37,673	0.443	0.497	0	1
Female	37,666	0.500	-	0	1
Age	37,644	36.75	14.75	18	106

3 **Table S1a: Summary Statistics I**

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	N	%
<i>Education (N=37,485)</i>		
No education	8,140	21.7
Primary education	10,237	27.3
Secondary education	13,660	36.44
Post-secondary education	5,448	14.5
<i>Profession (N=35,508)</i>		
Not working	7,188	20.2
Farmers	9,841	27.7
Unskilled workers	11,335	31.9
Specialists	3,474	9.8
Students	3,670	10.3
<i>News consumption (N=37,656)</i>		
Never	7,101	18.9
Less than once a month	15,116	40.1
A few times a month	8,054	21.4
A few times a week	5,189	13.8
Every day	2,196	5.8

5 **Table S1b: Summary Statistics II**

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<i>Items</i>	<i>Question wordings</i>
Migration intentions	<p>How much, if at all, have you considered moving to another country to live?</p> <p><i>Not at all, A little bit, Somewhat, A lot</i></p>
Climate literacy	<p>Have you heard about climate change or haven't you had the chance to hear about this yet?</p> <p><i>No, Yes</i></p> <p>(If Yes) What does the phrase "climate change" mean to you?</p> <p><i>Negative changes in the weather like more droughts, floods or extreme heat, Positive changes in the weather like better rainfall patterns or longer growing seasons, Other changes in weather patterns</i></p> <p>(If Yes) Do you think climate change is making life in [in your country] better or worse, or haven't you heard enough to say?</p> <p><i>Much better, Somewhat better, Neither/no change/about the same, Somewhat worse, Much worse</i></p>
News consumption	<p>How often do you get news from the following sources? Radio, Television, Newspapers, Internet, Social Media such as Facebook or Twitter</p> <p><i>Every day, A few times a week, A few times a month, Less than once a month, Never</i></p>
Education	<p><i>No education, Primary education, Secondary education, Post-secondary education.</i></p>
Profession	<p>What is your main occupation?</p> <p><i>Never had a job, Student, Housewife/Homemaker, Agriculture/Farming/Fishing/Forestry, Trader/Hawker/Vendor, Retail/Shop, Unskilled manual worker (e.g., cleaner, laborer, domestic help, unskilled manufacturing worker), Artisan or skilled manual worker (e.g., trades like electrician, mechanic, machinist or skilled manufacturing worker), Clerical or secretarial, Supervisor/Foreman/Senior Manager, Security services (police, army, private security), Mid-level professional (e.g., teacher, nurse, mid-level government officer), Upper-level professional (e.g., banker/finance, doctor, lawyer, engineer, accountant,</i></p>

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*professor, senior-level government officer), Other*

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Location *Rural, urban*

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**Table S1c: Question wordings**

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Short name	Long name	Brief description	Units	Reference paper
WSDI	Warm Spell Duration Index	Annual number of days contributing to events in which 6 or more consecutive days experience Tmax > 90th percentile	Days	Zhang et al., 2011
SPEI	Standardized Precipitation Evapotranspiration Index	A multi-scale drought measure specified using precipitation and evaporation, here computed at 12 monthly scales	Unitless	Vicente-Serrano, 2010
HWM	Heat Wave Magnitude	Average temperature across all individual heatwaves, wherein an individual heatwave is defined as 3 or more consecutive days with Tmax > 90th percentile	°C	Perkins and Alexander, 2013

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**Table S2: Climate Extreme Indices**

	(1) WSDI annual trend 1979-2016	(2) WSDI annual trend 2009-2016	(3) WSDI change [2009-2016]- [1979-2008]	(4) WSDI 10-year average	(5) WSDI 3-year average	(6) HWM 10-year average	(7) SPEI 3-year average
Climate literacy	0.0716*** (0.0078)	0.0806*** (0.0072)	0.0748*** (0.0076)	0.0708*** (0.0099)	0.0710*** (0.0095)	0.0786*** (0.0075)	0.0862*** (0.0070)
Climate change index	0.0345* (0.0180)	0.0027 (0.0019)	0.0011* (0.0006)	0.0005 (0.0006)	0.0193 (0.0394)	-0.0021 (0.0067)	0.0065 (0.0087)
Climate literacy*Index	0.0455*** (0.0161)	0.0023 (0.0019)	0.0013** (0.0006)	0.0012** (0.0006)	0.0746** (0.0356)	0.0073** (0.0037)	-0.0027 (0.0087)
Female	-0.0841*** (0.0051)	-0.0849*** (0.0051)	-0.0842*** (0.0051)	-0.0842*** (0.0051)	-0.0843*** (0.0051)	-0.0841*** (0.0051)	-0.0839*** (0.0051)
Age	-0.0066*** (0.0002)	-0.0066*** (0.0002)	-0.0066*** (0.0002)	-0.0066*** (0.0002)	-0.0066*** (0.0002)	-0.0066*** (0.0002)	-0.0066*** (0.0002)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Climate zone FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	37,637	37,052	37,637	37,637	37,637	37,637	37,637
R2	0.113	0.114	0.113	0.113	0.113	0.113	0.113

Notes: Estimates from OLS models. Standard errors clustered at the survey interview location in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table S3: Effect of Climate Change Variables on Migration Intentions for Climate Literates and Illiterates**

	(1) WSDI annual trend 1979-2016	(2) WSDI annual trend 2009-2016	(3) WSDI change [2009-2016]- [1979-2008]	(4) WSDI 10-year average	(5) WSDI 3-year average	(6) HWM 10-year average	(7) SPEI 3-year average
Climate literacy	0.221*** (0.0376)	0.292*** (0.0371)	0.241*** (0.0363)	0.207*** (0.0479)	0.227*** (0.0463)	0.268*** (0.0367)	0.303*** (0.0344)
Climate change index	0.145 (0.0939)	0.0173* (0.0099)	0.0053 (0.0033)	0.00206 (0.0034)	0.111 (0.202)	-0.0128 (0.0321)	0.0132 (0.0432)
Climate literacy*Index	0.263*** (0.0798)	0.0053 (0.0095)	0.0073*** (0.0028)	0.0075** (0.0029)	0.384** (0.173)	0.0354** (0.0174)	-0.0165 (0.0419)
Female	-0.352*** (0.0266)	-0.355*** (0.0268)	-0.352*** (0.0266)	-0.352*** (0.0266)	-0.352*** (0.0266)	-0.351*** (0.0266)	-0.350*** (0.0266)
Age	-0.0306*** (0.0012)	-0.0306*** (0.0012)	-0.0306*** (0.0012)	-0.0306*** (0.0012)	-0.0306*** (0.0012)	-0.0305*** (0.0012)	-0.0306*** (0.0012)
Primary education	0.259*** (0.0414)	0.260*** (0.0419)	0.261*** (0.0414)	0.262*** (0.0413)	0.262*** (0.0414)	0.262*** (0.0414)	0.260*** (0.0414)
Secondary education	0.557*** (0.0414)	0.564*** (0.0417)	0.559*** (0.0414)	0.559*** (0.0414)	0.560*** (0.0415)	0.560*** (0.0416)	0.558*** (0.0415)
Post-secondary education	0.898*** (0.0544)	0.888*** (0.0546)	0.900*** (0.0543)	0.900*** (0.0546)	0.900*** (0.0545)	0.897*** (0.0544)	0.897*** (0.0546)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Climate zone FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	37,449	36,873	37,449	37,449	37,449	37,449	37,449

Notes: Estimates from Ordinal Logistic models. DV migration intentions categorized into “no at all”, “a little bit”, “somewhat”, and “a lot”. Standard errors clustered at the survey interview location in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table S4: Effect of Climate Change Variables on Migration Intentions for Climate Literates and Illiterates, Ordinal Logistic Regression**

	(1) WSDI annual trend 1979-2016	(2) WSDI annual trend 2009-2016	(3) WSDI change [2009-2016]- [1979-2008]	(4) WSDI 10-year average	(5) WSDI 3-year average	(6) HWM 10-year average	(7) SPEI 3-year average
Climate literacy	0.0455*** (0.0076)	0.0561*** (0.0071)	0.0490*** (0.0074)	0.0446*** (0.0098)	0.0456*** (0.0094)	0.0540*** (0.0075)	0.0603*** (0.0069)
Climate change index	0.0312* (0.0169)	0.0027 (0.0019)	0.0011* (0.0006)	0.0005 (0.0006)	0.0214 (0.0375)	-0.0019 (0.0061)	0.0041 (0.0083)
Climate literacy*Index	0.0477*** (0.0156)	0.0021 (0.0019)	0.0014** (0.0006)	0.0012** (0.0006)	0.0753** (0.0350)	0.0067* (0.0036)	-0.0039 (0.0086)
Female	-0.0710*** (0.0052)	-0.0716*** (0.0052)	-0.0710*** (0.0052)	-0.0710*** (0.0052)	-0.0710*** (0.0052)	-0.0709*** (0.0052)	-0.0708*** (0.0052)
Age	-0.0057*** (0.0002)	-0.0057*** (0.0002)	-0.0057*** (0.0002)	-0.0057*** (0.0002)	-0.0057*** (0.0002)	-0.0057*** (0.0002)	-0.0057*** (0.0002)
Primary education	0.0444*** (0.0075)	0.0447*** (0.0076)	0.0448*** (0.0075)	0.0449*** (0.0075)	0.0450*** (0.0075)	0.0449*** (0.0075)	0.0447*** (0.0075)
Secondary education	0.109*** (0.0081)	0.110*** (0.0081)	0.109*** (0.0081)	0.109*** (0.0081)	0.109*** (0.0081)	0.109*** (0.0081)	0.109*** (0.0081)
Post-secondary education	0.186*** (0.0109)	0.184*** (0.0109)	0.187*** (0.0109)	0.187*** (0.0110)	0.187*** (0.0110)	0.186*** (0.0109)	0.186*** (0.0110)
Constant	0.618*** (0.0493)	0.610*** (0.0481)	0.626*** (0.0500)	0.627*** (0.0498)	0.621*** (0.0492)	0.629*** (0.0504)	0.626*** (0.0499)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Climate zone FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	37,449	37,449	37,449	37,449	37,449	37,449	37,449
R2	0.125	0.126	0.125	0.125	0.125	0.125	0.125

Notes: Estimates from OLS models. Standard errors clustered at the survey interview location in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

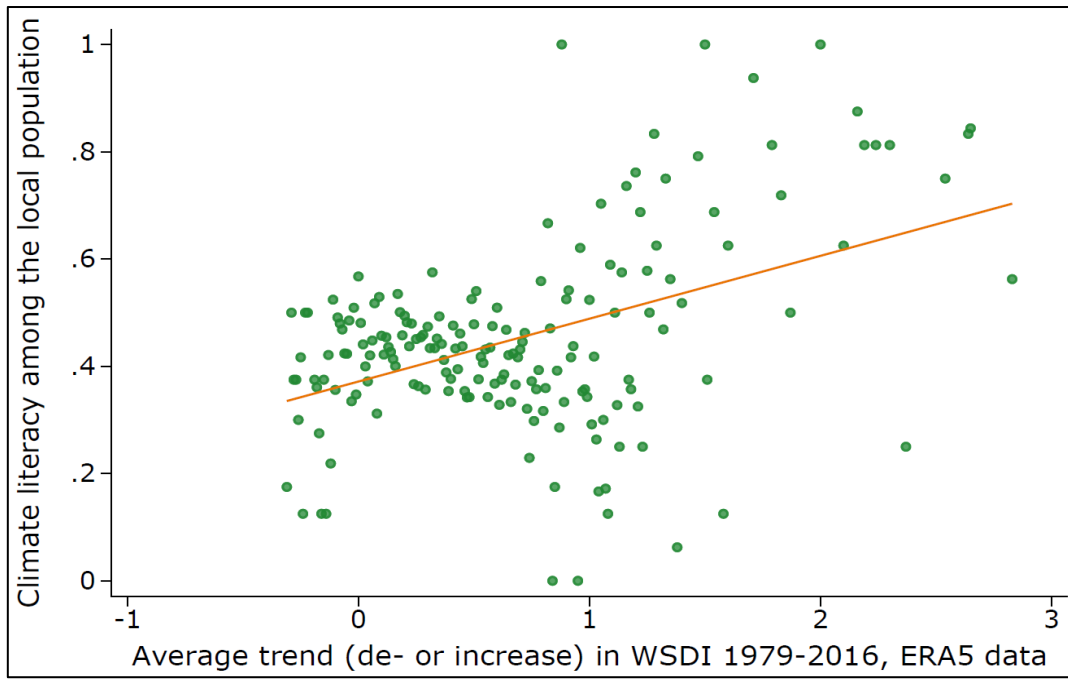
**Table S5: Effect of Climate Change Variables on Migration Intentions for Climate Literates and Illiterates, Controlling for Education**

	(1)	(2)	(3)	(4)
<i>Ref: no education</i>				
Primary education	0.066*** (0.009)			
Secondary education	0.210*** (0.011)			
Post-secondary education	0.382*** (0.012)			
<i>Ref: Out of work</i>				
Farmers		0.051*** (0.009)		
Unskilled workers		0.091*** (0.008)		
Specialists		0.292*** (0.011)		
Students		0.195*** (0.010)		
<i>Ref: Never</i>				
Less than once a month			0.122*** (0.007)	
A few times a month			0.221*** (0.009)	
A few times a week			0.319*** (0.011)	
Every day			0.335*** (0.014)	
<i>Ref: Rural</i>				
Urban				0.084*** (0.008)
Country FE	Yes	Yes	Yes	Yes
Climate zone FE	Yes	Yes	Yes	Yes
Month-year FE	Yes	Yes	Yes	Yes
Observations	37,819	35,830	38,035	38,071
R2	0.115	0.090	0.101	0.067

Notes: Estimates from OLS models. Standard errors clustered at the survey interview location in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table S6: Correlates of Climate Change Literacy**





*Notes:* The figure shows the average number of respondents who have heard of climate change aggregated by the local WSDI trend.

**Figure S1: Correlation of Climate Change Literacy and local WSDI trend**